TAPPI Standards: Regulations and Style Guidelines

REVISED January 2018

Preface

This manual contains the TAPPI regulations and style guidelines for TAPPI Standards. The regulations and guidelines are developed and approved by the Quality and Standards Management Committee with the advice and consent of the TAPPI Board of Directors.

NOTE: Throughout this manual, "Standards" used alone as a noun refers to ALL categories of Standards. For specific types, the word "Standard" is used as an adjective, e.g., "Standard Test Method," "Standard Specification," "Standard Glossary," or "Standard Guideline."

If you are a Working Group Chairman preparing a Standard or reviewing an existing Standard, you will find the following important information in this manual:

- How to write a Standard Test Method using proper terminology and format (Section 7)
- How to write TAPPI Standard Specifications, Glossaries, and Guidelines using proper terminology and format (Section 8)
- What requirements exist for precision statements in Official and Provisional Test Methods (Sections 4.1.1.1, 4.1.1.2, 6.4.5, 7.4.17).
- Use of a checklist to make sure that all required sections have been included in a Standard draft (Appendix 4).
- How Working Group Chairman, Working Groups, and Standard-Specific Interest Groups fit into the process of preparing a Standard (Section 6.3, 6.4.1, 6.4.2, 6.4.3, 6.4.4, 6.4.6, 6.4.7).
- How the balloting process works (Sections 6.4.6, 6.4.7, 6.4.8, 6.4.9)
- How to resolve comments and negative votes (Sections 9.5, 9.6, 9.7)

NOTE: This document covers only the regulations for TAPPI Standards, which may include Test Methods or other types of Standards as defined in these regulations. A separate set of regulations is available for Technical Information Papers (TIPs).

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1. Scope

This manual describes the procedures and policies whereby TAPPI Standards are developed and published, and the guidelines for style and format of these Standards.

2. Introduction

2.1 The overall management of the TAPPI Standards program, including the content of these Regulations and Style Guidelines, is the responsibility of the Quality and Standards Management Committee of the TAPPI Board of Directors, with the advice and consent of the Board. Q&SMC may, with advice and consent of the Board, from time to time revise these Guidelines in order to provide continuity and continual improvement of the TAPPI Standards program. Editorial changes may be made by approval of the Q&SMC Chairman.

2.2 A detailed history of the TAPPI Standards program, from its beginning around 1920 through 1992, is reprinted in Appendix 1. Appendix 8 is an extensive cross reference of ISO, TAPPI, and ASTM testing procedures for pulp, paper, paperboard, packaging, and related materials.

2.3 TAPPI Standards, including Test Methods, Specifications, Glossaries, and Guidelines, are promulgated for the information of the industries TAPPI serves. Some standards may, as appropriate, be voluntarily adopted by a willing buyer and willing seller in their purchase and sale contract. TAPPI standards are promulgated following notice and the participation of interested parties (typically including buyers, sellers, suppliers and customers) in a deliberative process involving Standard-Specific Interest Groups which are open to all interested parties. TAPPI standards are not intended, and shall not be used, to limit or otherwise restrict innovation, output, or the range of choices available to customers or consumers. Any questions or concerns regarding a TAPPI standard should be directed to the TAPPI Standards Administrator.

3. Referenced Standards

3.1 The following documents are referenced in these guidelines:

TAPPI Antitrust Policy (Appendix 2)
TAPPI Test Methods, including:
T 1200 “Interlaboratory Evaluation of Test Methods to Determine TAPPI Repeatability and Reproducibility”
T 1205 “Dealing with Suspect (Outlying) Test Determinations”
T 1210 “Units of Measurement and Conversion Factors”
TAPPI Useful Methods
TAPPI Technical Information Papers, including:
TIP 0800-01 “Units of Measurement and Conversion Factors”
ISO Standards
ASTM Standards
ANSI/ASME Y1.1-1972 (R1984) “Abbreviations for Use in Drawings and in Text”

3.2 TAPPI Standards may be ordered from TAPPI PRESS in CD-ROM or print-on-demand formats. Individual documents are also available in hard copy or electronically. In addition, a company license for access to all TAPPI Standards and Technical Information Papers for an annual fee, is available. For price information, visit the TAPPI website at www.tappi.org, or contact TAPPI Member Connection for price information: 1-800-332-8686 (U.S.) or 1-800-446-9431 (Canada).

3.3 For Working Group Chairmen who are completing revision or review of TAPPI Standards, one copy of each related standard or method from other organizations which may be on file at TAPPI may be obtained at no cost by request from the TAPPI Standards Administrator. Fair-use copyright laws prohibit any other copies to be distributed. Any additional copies of such Standards must be purchased from the appropriate organization.

The TAPPI contact information is:

TAPPI	Phone: +1 770-446-1400
15 Technology Parkway South	Fax: +1 770-446-6947
Norcross, GA 30024	email: memberconnection@tappi.org
U.S.A.	www.tappi.org

ASTM Standards may be ordered from:

ASTM	Phone: +1 610 832-9500
100 Barr Harbor Drive	Fax: +1 610 832-9555
West Conshohocken, PA 19428-2959	email: service@astm.org
U.S.A.	www.astm.org

ISO Standards may be ordered from:

ANSI	Phone: +1-212-642-4900
25 West 43rd Street	Fax: +1-212-398-0023
New York, NY 10036	www.ansi.org

Global Engineering Document Sales	phone: 1-800-854-7179
15 Inverness Way East	fax: +1 303-397-2740
Englewood, CO 80112	email: globalcustomerservice@ihs.com

4. Categories of TAPPI Standards

4.1 TAPPI Standards may be in the form of Test Methods or as other documents (including specifications, guidelines, glossaries, practices) that have been developed as TAPPI Standards through the consensus of a technical working group (defined in these guidelines as Standard-Specific Interest Groups) acting in accordance with the procedures described in these guidelines. TAPPI does not engage in activities or publish Standards that could lead to standardization of products or services in ways that would reduce competition, impede the development of improvements to those products or services, or would result in a stabilization of costs for those products or services.

4.1.1 **TAPPI Standard Test Methods** are testing procedures and related practices used in the measurement, evaluation, and description of pulp, paper, packaging, and related products, including raw materials used in their manufacture, use, or in scientific investigations of any such substances. Included as part of the methods are various classifications of methods and practices as defined in Sections 4.1.1.1-4.1.1.6.

4.1.1.1 Standard **Official Method:** A testing procedure which has qualities of accuracy and precision such as to make it meet all of the following requirements:

1. The testing procedure is applicable to the evaluation of pulp, paper, packaging, or related products, or of materials that possess a measurable property of special or unique importance to the pulp, paper, packaging, and related industries.
2. For methods not specific to a particular instrument, equipment used in the procedure is described in sufficient detail to enable the user to check its operation and compliance with the procedure either by well-known means or by means described in the testing procedure to achieve acceptable results.
3. For methods specific to a particular instrument, equipment used is described in the procedure in sufficient detail to be understood or acquired by the user. Instructions for its use may either be included in the method or listed in a published instrument manual. The name of the manufacturer or distributor of the instrument shall not appear in the method, unless the instrument name is needed to differentiate the method from another TAPPI method purported to measure the same property. Names of suppliers will be available through the TAPPI Standards Administrator as part of the Suppliers List, which is also published in the full set of Test Methods.
4. The procedure is described in sufficient detail to enable a trained technician to put it into practice and obtain results with the stated precision or accuracy.
5. The testing procedure consists of only one procedure with a definite series of steps for testing each property, unless any alternative procedure or step yields identical results for that property within the stated precision.
6. The testing procedure states the units in which the results are to be reported. If it has been deemed desirable to permit the use of alternative units, the preferred units are to be noted.
7. A testing procedure which produces numerical results contains a statement of precision embodying values of repeatability and reproducibility (as defined in T 1200 “Interlaboratory Evaluation of Test Methods to Determine TAPPI Repeatability and Reproducibility”) or a statement that such values cannot practicably be determined.
8. The testing procedure may contain expressed or implied product, material, or equipment specifications in any form only to the extent that such specifications are necessary to specify the test equipment or material required to carry out the method.

4.1.1.2 **Standard Provisional Method**: A testing procedure which meets all the requirements for an Official Method except for extensive history in its use. If it produces numerical results, it is required to have a precision statement containing at least a value for within-laboratory precision, as described in T 1200 “Interlaboratory Evaluation of Test Methods to Determine TAPPI Repeatability and Reproducibility.” A testing

procedure may remain a Provisional Method for a maximum of five (5) years, within which time it must be reviewed and then be advanced to an Official Method or withdrawn.

4.1.1.3 **Standard Practice:** An accepted procedure for the performance of one or more operations or functions associated with TAPPI Test Method activities. "Sampling and Accepting a Single Lot of Paper, Paperboard, Containerboard or Related Product" (T 400), "Forming Handsheets for Physical Tests of Pulp" (T 205) and "Static Creasing of Paper for Water Vapor Transmission Tests" (T 465) are examples of TAPPI Standard Practices at the time of issue of these guidelines. Practices may include, but are not limited to, documents regarding installation, maintenance and operation of testing apparatus, sampling or selection of materials for testing, and documents giving general guidance for making particular types of measurements or preparing test specimens for such measurements. Standard Practices carry the designation “sp” in the suffix of the identifying number and must be balloted and reviewed as if they were Official Methods. The requirements found in Sections 5, 6, and 7 of these guidelines apply to both methods and practices except where specific differences are noted.

4.1.1.4 **Standard Classical Method:** A testing procedure, usually a former Official Method, which is no longer in common use, or which has been superseded by advanced technology. These testing procedures are technically sound, have a history of use, and may contain a body of literature references that make their preservation valuable. Classical Methods are part of the current set of TAPPI Test Methods and shall be reviewed every 10 years, following the procedure as outlined in Section 6.8 of these guidelines.

4.1.1.5 **Useful Method:** A document written to describe a test, procedure, or practice which may be proposed by a Working Group of no fewer than three TAPPI members not employed by the same organization and written in the same general style as a TAPPI Standard Test Method, but with the inclusion or exclusion of certain sections as deemed appropriate by the Working Group, and with minimum precision requirements that may be expanded at the discretion of the Working Group. TAPPI Useful Methods are not Standards as defined in these guidelines, and a separate set of guidelines for the development and review of Useful Methods has been developed (approved initially by Q&SMC by email vote in July 2010).

4.1.1.6 The suffix following the Test Method number indicates the category of the method. Test Method numbers consist of a capital T, followed by a space, then a number (assigned sequentially within several Test Method categories), another space, a two-letter designation of classification, a hyphen, and the last two digits of the year published.

4.1.1.7 The subject areas and their numbering are:

Fibrous Materials and Pulp Testing	T 1-200 Series
Paper and Paperboard Testing	T 400-500 Series
Nonfibrous Materials Testing	T 600-700 Series
Container Testing	T 800 Series
Structural Materials Testing	T 1000 Series
Testing Practices	T 1200 Series

Numbers for new Test Methods are assigned sequentially. Withdrawn numbers are not reused unless a withdrawn method is reinstated.

4.1.1.8 The two-letter designations for classifications of Test Methods are:

om = Official Method
pm = Provisional Method
sp = Standard Practice
cm = Classical Method

In the Numerical Index, the designation "wd" indicates that the method has been withdrawn. The "UM" designation for Useful Methods appears also in references to these documents.

4.1.1.9 *Example*: A new Provisional Method for testing containerboard adopted in 1993 might be designated as: T 830 pm-93.

4.1.2 TAPPI Standards may also include certain specifications, definitions, glossaries, technical information, or guidelines that are unrelated to Test Methods. Although similar documents may exist in the TAPPI Technical Information Papers (TIPs) set, the documents that become a part of the Standards set must comply with the Standards regulations in their development and approval.

4.1.2.1 TAPPI Standards that do not fall under the Test Methods category will be numbered beginning with T 1500, and shall be numbered consecutively in this T 1500 series. The number shall consist of a capital T, followed by a space, then the number, another space, a two-letter designation of classification, a hyphen, and the last two digits of the year published.

4.1.2.2 The two-letter designations for classifications of documents in the T 1500 series are:

ss = Standard Specification
gl = Standard Glossary
sg = Standard Guideline

In the Numerical Index, the designation "wd" indicates that the method has been withdrawn.

4.1.3 **Withdrawn Standards:** Any TAPPI Standard may be withdrawn for one of two reasons:

4.1.3.1 Any TAPPI Standard may be withdrawn following the procedures in section 6 of these Guidelines.

4.1.3.2 **Withdrawn TAPPI Standards, Administrative**: When an SSIG withdraws the method for only administrative reasons such as lack of continued interest in the method, or inability to find laboratories willing to participate in developing a precision statement, or similar non-technical reasons, the method shall be considered withdrawn administratively (wa). A TAPPI Standard may also be withdrawn because of lack of compliance of an SSIG or Working Group Chairman with the administrative procedures in Section 6 of these Guidelines, and particularly as described in 6.4.6.7, shall be described as "withdrawn administratively (wa)."

4.1.3.2.1 Administratively withdrawn Standards, whether withdrawn by an SSIG or by Q&SMC action, shall no longer be published as a part of the active TAPPI Standards, but may be purchased from TAPPI. When such administratively withdrawn standards are distributed in any hard copy or electronic form of any type, they shall be clearly identified as a withdrawn Standard, the fact that the method has been administratively withdrawn, and the date of withdrawal.

4.1.3.2.2 In any case where a Standard comes to the attention of Q&SMC under the provisions of 6.4.6.7 of these Guidelines, if the ballot history of the document, or technical knowledge from a member or

members of Q&SMC indicates that technical issues are preventing a successful completion of balloting, Q&SMC may, in its sole judgment, and in compliance with 6.4.6.7 administratively withdraw the Test Method but indicate the withdrawal as having been technically withdrawn (see Section 4.1.3.3).

4.1.3.3 **Withdrawn TAPPI Standards, Technical**: Any TAPPI Standard that is withdrawn for any technical reason (safety concerns, method provides erroneous results, or similar technical reasons) shall be balloted for withdrawal by an appropriate SSIG following the procedures of Section 6 of these Guidelines. Upon successful ballot to withdraw, it shall be designated as "Technically withdrawn (wt)." Such technically withdrawn Standards, whether withdrawn by an SSIG or by Q&SMC action, shall no longer be published as a part of the active TAPPI Standards, and shall no longer be available for purchase from TAPPI.

4.1.3.4 **Withdrawal of American National Standards**. Any TAPPI standard that has been approved as an American National Standard must be withdrawn as a national standard whenever the TAPPI standard has been withdrawn or reclassified as a Classical Method. The BSR-8 form shall be submitted to ANSI in the case of withdrawal of a TAPPI national standard.

5. Definitions and Terminology

5.1 The following definitions describe the persons or groups or people involved in the TAPPI Standards program:

5.1.1 **Standard-Specific Interest Group (SSIG):** A group of persons including members and non-members of TAPPI who have an interest in being a member of the group which votes on a particular Standard. **Permanent members** of the Standards-Specific Interest Group (SSIG) shall be members in good standing of TAPPI; **voting members** will include permanent members plus other TAPPI members or nonmembers who indicate an interest in the Standards and have chosen to submit a vote. See Section 6.4.3 for the requirements regarding the makeup of SSIGs. The SSIG is the Consensus Body for American National Standards ("ANSs").

5.1.2 **Standards Advisory Review Group:** A group of TAPPI members appointed by the Quality and Standards Management Committee (Q&SMC) who are familiar with the TAPPI Standards process and are qualified to participate in reviewing appeals filed during the process of developing new Standards or reviewing current standards and to participate in the final review of Standards after they have been approved by the appropriate SSIG. The Standards Advisory Review Group (SARG) is responsible for determining that the Standards review and/or development process has been properly followed, and that all negatives and comments have been resolved as required by these regulations. The SARG members are appointed to terms whose lengths are determined by the Q&SMC. The SARG shall have a minimum of three members, but may have as many as the Q&SMC deems appropriate.

5.1.3 **Working Group:** A group of persons, which may include both TAPPI members and non-members, assigned a specific Work Item with regard to the TAPPI Standards program (see Section 6.4.4). Working Groups (WGs) are created and discharged by the TAPPI Standards Administrator with the advice of appropriate Standard-Specific Interest Groups. The method of managing the tasks of the WG is through the Work Item (WI) system (see 5.2.1); thus a SSIG generally has specific responsibility for a specific WI. A WG may be, and frequently is, a subset of a Standard-Specific Interest Group.

5.1.4 **Working Group Chairman:** A member of a working group recruited by the Standards Administrator to direct the activities of the WG responsible for a particular WI. For simple Standards revision tasks, the Working Group Chairman (WGC) may be the only member of the working group.

5.1.5 **Subject Category:** An entry on a listing of technical areas relating to the pulp, paper, packaging, and allied industries. The listing is maintained by the TAPPI Standards Administrator and is used for determining areas of interest for Standard-Specific Interest Groups. The numbers assigned to the SCs are also used in the numbering system for TAPPI Technical Information Papers (see the guidelines for TAPPI Technical Information Papers). The listing of Subject Categories may be found in Appendix 7 of these guidelines.

5.1.6. **Quality and Standards Management Committee.** This Committee, frequently referred to by its initials, Q&SMC, is appointed by the TAPPI Chairman of the Board, and it reports to the TAPPI Board of Directors. Its scope is:

> The Quality and Standards Management Committee is responsible for administration and maintenance of the procedures and guidelines relevant to TAPPI Standards, Technical Information Papers, and Useful Methods.. The Committee maintains liaison with internal and external groups as appropriate, including ANSI as it relates to TAPPI's accreditation as a standards development organization. The Committee brings major policy proposal changes to the Board of Directors.

The Q&SMC has become active in coordinating TAPPI relationships with several other groups, including the U. S. Technical Advisory Groups (TAGs) to ISO (International Organization for Standardization)

TC 6 (Pulps, Paper, and Paperboard), ISO TC 176 (Quality Management), and the American Society of Testing and Materials (ASTM) D06 Committee on Paper and Paperboard. Another activity of Q&SMC is review of Standards which are overdue for required 5- or 10-year review.

The Q&SMC has overall responsibility for TAPPI Standards activity, including the withdrawal of Standards that have not been reviewed in a timely fashion (see 6.8.2.1); however, it should be understood that any references to the Quality and Standards Management Committee in these guidelines simultaneously refers to any subcommittee of the Q&SMC which has been charged with responsibilities relating to the procedures as stated in these guidelines.

The Chairman of the Q&SMC is appointed by the TAPPI Chairman of the Board. The QS&MC Secretary is a member of the TAPPI professional staff. Duties include recording and distributing minutes of the Q&SMC meetings, arranging for meetings as requested by the Q&SMC Chairman, and maintaining records of TAPPI Standards activities.

5.1.7 **Standards Administrator:** For the purposes of reference in these guidelines, a member of the TAPPI professional staff or any consultants designated by TAPPI staff responsible for overseeing and administering the Standards program. Usually, the Standards Administrator and the Q&SMC Secretary are the same person. The Standards Administrator duties may also be combined with the duties of another staff member. The official title of the staff person acting as Standards Administrator (as defined in these guidelines) may be different.

5.1.8 **Technical Group:** Any organized technical group within the TAPPI organizational structure. An example of such a technical group would be one of the Technical Committees or Divisions of TAPPI whose scope focuses on a particular subject area or activity. Technical groups within TAPPI may offer advice on Standards review or propose new Standards that fall under the group’s area of expertise, but a technical group does not serve as the official consensus body which approves Standards.

5.2 The following definitions describe actions which may be taken to improve TAPPI's methods and procedures involved in the administration of Standards:

5.2.1 **Work Item (WI):** An activity undertaken by an SSIG to develop technical information of significant and timely value to the industries TAPPI serves. WIs are initiated either by a notification from an SSIG to the TAPPI Standards Administrator or by the Standards Administrator at the time of automatic review of an existing Standard. WIs that are proposals for new Standards must be accompanied by a draft before the WI is opened and a number is assigned. A ballot for a new Standard under a WI must be initiated within six months after the WI is opened. After six months, the WI will be closed, unless a request for an extension has been requested and granted from the chairman of the Q&SMC. See Section 6.4 of these guidelines for details.

5.2.2 **Draft:** A document which is a proposed new or revised Standard and which is balloted to the responsible SSIG for consideration as a new Standard or a revision of an existing Standard.

5.2.3 **Automatic Review:** An automatic procedure wherein the responsible SSIG must review an existing Standard and either reaffirm, revise, reclassify, or withdraw the Standard. Five-year reviews of most Standards are initiated four years after publication of the existing edition of the Standard, with the intent being to take action within one year of initiation. Ten-year reviews of Classical Test Methods are initiated nine years after publication of the existing edition of the Standard, with the intent being to take action within one year of initiation.

5.2.4 **Classification:** The type of Standard (Official Method, Provisional Method, Classical Method, Standard Practice, Standard Specification, Standard Glossary, Standard Guideline).

5.2.5 **Revision:** A Standard that includes changes to an existing Standard .

5.2.6 **Reaffirmation:** A Standard that indicates no changes have been made since the previous edition and after regular review of the Standard has been accomplished.

5.2.7 **Correction**: Correction of errors in printing, format, spelling, punctuation, as well as improvements in clarity of expression or changes to reduce or eliminate ambiguity. Often referred to as "editorial corrections," corrections may not include any changes in wording that would in any way make substantive changes in the Standard. See Section 6.5 for more details.

5.2.8 **Reclassification:** Changing from one classification of an existing Standard to a new classification.

5.2.9 **Withdrawal:** Removal of an existing Standard from the current set of Standards.

5.2.10 **Ballot:** Distribution of a proposed new Standard or reaffirmation, revision, reclassification, or withdrawal of a Standard to the individual members of a responsible SSIG with instructions to vote on agreement or disagreement with the proposed action.

5.2.11 V**ote:** Action by an individual member of a responsible SSIG, indicating agreement or disagreement with a proposed action on a Standard.

5.2.12 **Public Review.** Means by which the full membership of TAPPI or any other interested parties have access to Standards being reviewed for revision or adoption by a SSIG and have the ability to make comments on the actions being proposed (see Section 6.4.7.4).

5.2.13 **Resolution of negative votes and comments:** Action taken by a Working Group Chairman to address comments made on ballots by other members of the responsible SSIG or comments made by other TAPPI members or nonmembers during Public Review and to incorporate such comments into the next draft of the Standard or to find the comments nonpersuasive or unrelated (see Section 9).

5.2.14 **Public Notice.** Means of notifying interested parties, including TAPPI members and nonmembers, regarding Standards that will be up for review over a specified period of time (see Section 6.8.1.1) and Standards that are in the final stage of voting (review by the Standard Advisory Review Group, see Section 6.4.6.11). The public notices shall appear in both the TAPPI *Standards and TIPs Action Report* (STAR) and *ANSI Standards Action.*

5.3 The following definitions are related to policies, some mandated and others developed through time, that govern the TAPPI Standards program:

5.3.1 **Jurisdiction:** Responsibility for particular Standards. Such responsibility is vested within the SSIGs and is assigned based on the Subject Category of the SSIG. Disputes regarding the responsibility for particular Standards must be resolved by the Q&SMC.

5.3.2 **Overdue Standard:** A Standard in review whose current edition is more than five years old (if any type of Standard other than a Classical Method) or ten years old (if a Classical Method).

5.3.3 **Joint Work Item:** A WI undertaken by more than one SSIG or undertaken by a TAPPI SSIG working with a technical group of another society. If the joint assignment is between two or more TAPPI SSIGs, one SSIG acts as the primary SSIG and officially undertakes the WI, with other SSIGs acting as

secondary SSIGs. In the case of joint activities between TAPPI SSIGs and other society technical committees or groups, the regulations governing TAPPI Standards shall apply in a case where the other society is not an ANSI-accredited standards developing organization (SDO); if the other society is an ANSI-accredited SDO, then either that society's regulations shall apply, or TAPPI's regulations shall apply.

5.3.4 **Precision Statement:** A required section of any TAPPI Test Method which states the degree of agreement expected between test results or which states that a statement of precision is inappropriate for a particular Test Method because of its qualitative nature.

5.3.5 **Reference Materials List:** A list maintained by TAPPI, and available in the Standards print-on-demand publication, the CD-ROM, the company license website, and also on the TAPPI website, giving the names of organizations which claim to provide reference materials for performing a given test according to the published Test Method. These organizations claim competence and performance in maintenance of these reference materials. Reference material suppliers must indicate to the TAPPI Standards Administrator their claim in order to be included on this list. With the exception of Reference Materials exclusively provided by TAPPI, references to specific reference material supplier organizations shall not appear in individual Standards (see Sections 7.4.9.7 and 8.3.5.7).

5.3.6 **Suppliers List:** A list maintained by TAPPI, and available in the Standards print-on-demand publication, the CD-ROM, the company license website, and also on the TAPPI website, giving the names of organizations which claim to provide equipment and supplies for performing a given test according to the published Test Method. These suppliers claim competence and performance in maintenance of these materials. Suppliers must indicate to the TAPPI Standards Administrator their claim in order to be included on this list. References to specific supplier organizations shall not appear in individual Standards (see Sections 7.4.9.4 and 8.3.5.4).

5.3.7 **Supplier Directory:** A list maintained by TAPPI, and available in the Standards print-on-demand publication, the CD-ROM, the company license website, and also on the TAPPI website, giving the names and addresses of organizations which claim to provide either equipment or supplies (from the Suppliers List) or reference materials (from the Reference Materials List).

5.3.8 **Numerical Listing:** A list maintained by TAPPI, and available in the Standards print-on-demand publication, the CD-ROM, the company license website, and also on the TAPPI website, for Standards showing all of the current and withdrawn numbers in order.

5.3.9 **Subject Index:** An index, grouped by keyword, maintained by TAPPI for Standards.

5.3.10 **Testing Laboratories/Research Facilities List:** A list maintained by TAPPI, and available in the Standards print-on-demand publication, the CD-ROM, the company license website, and also on the TAPPI website, giving the names and addresses of organizations which claim to provide facilities for performing tests or doing research related to testing.

5.3.11 **Effective Date of Issue:** The date on which final approval (from the SARG) for a new or revised Standard is achieved.

6. Procedures for Review and Approval of TAPPI Standards

6.1 Scope

The procedures to be followed for preparation, review, and approval of TAPPI Standards are described herein.

6.2 Definitions

The classifications of Standards published by TAPPI are identified and defined in Section 4 of these guidelines.

6.3 Subject Categories and Standard Specific Interest Groups

6.3.1 Each TAPPI Standard is the responsibility of a Standard-Specific Interest Group (SSIG). The individual Standards fall generally into the Subject Categories as defined in Appendix 7. **Permanent members** of the SSIG are TAPPI members who have indicated their desire to participate in one or more SSIGs. **Voting members** of SSIGs are the permanent members plus any other TAPPI member or nonmembers who have an interest in one or more of the standards and have expressed interest in being a member of the group which votes on a particular Standard. See Section 5 for definitions of these terms.

6.3.2 *Formation of Standard-Specific Interest Groups*. At the time of adoption of the November 2000 version of the guidelines, the members of the technical committees of TAPPI which existed prior to March 1, 2000, were polled to determine their interest in particular Standards. A public announcement was also made so that other members of TAPPI could sign up for Standard balloting if they wished. Any TAPPI member in good standing may request permanent membership in one or more SSIGs at any time or may request deletion from the roster of any SSIG at any time. Other TAPPI members or nonmembers who express an interest in participating in ballots shall be added to the SSIGs for purposes of voting.

6.3.3 *Participation in Standard-Specific Interest Groups*. TAPPI membership is required for continued permanent membership in Standard-Specific Interest Groups. Members may request addition to or deletion from Standard-Specific Interest Groups at any time by contacting the Standards Administrator. Any SSIG member who fails to return three ballots in a row on a particular Standard shall be dropped from membership from that SSIG. Any TAPPI member who is dropped from three SSIGs due to failure to return ballots will also be dropped from all SSIGs.

6.4 Preparation procedures

6.4.1 Standard-Specific Interest Groups are responsible for drafting new Standards and reviewing or revising existing Standards in accordance with applicable operating guidelines. Every review of an existing Standard and every request for development of a new Standard must be assigned a Work Item number. The Standards Administrator automatically initiates a Work Item for review of an existing Standard in accordance with the review requirements as described in Section 6.8. Any member of an existing SSIG may initiate action for early review of a Standard (see 6.8.3) by notifying the Standards Administrator in writing (either in hard copy or electronically). For new Standards, any TAPPI member may present a proposal to the Standards Administrator, who will assist in the formation of an SSIG to be responsible for the proposed new Standard (see 6.4.1.1). An SSIG given the assignment for review of an existing Standard or development of a new Standard is referred to as the “responsible SSIG.” See Chart 1 in Appendix 5 for specific steps in developing a new Standard and for specific steps in reviewing an existing Standard. A WI number is not required for editorial corrections (see 6.5.1). See also 6.5.2 regarding the effects of a revision on average test results.

6.4.1.1 *Formation of new SSIGs.* When a new Standard is proposed, an SSIG must be formed for balloting purposes. The interested party who submits a draft for consideration as a new Standard shall consult the Standards Administrator to determine the appropriate Subject Category of the proposed new method and to determine which TAPPI technical groups might have an interest in the proposed Standard. A public notice announcing the proposed new method shall (1) be sent to any technical groups within the TAPPI organizational structure which would have an interest in the proposed Standard based on the scope of technical activity within that group; (2) be posted in the TAPPI official newsletter for Standards and TIPs action, the *Standards and TIPs Action Report* (STAR), and (3) shall be submitted to ANSI via the Project Initiation Notification System (PINS) for announcement in *ANSI Standards Action*. These announcements will contain a deadline date for any interested parties, both TAPPI members and non-members, to respond indicating their desire to join the SSIG for the proposed new Standard or to respond indicating any objections to the new standards activity due to potential conflict or duplication with another American National Standard. Any such comments received will be addressed in accordance with clause 2.5 of the ANSI Essential Requirements.

6.4.1.2 Requests for initiating a Work Item for a new Standard must be accompanied by a draft (in the format outlined in Section 7 for test methods or Section 8 for specifications, guidelines, and glossaries) before the WI number will be assigned. A ballot for a new Standard Test Method under a WI must be initiated within six months after the opening of the WI, or the WI will be closed, unless a request for extension has been requested and granted from the chairman of the Q&SMC.

6.4.1.3 *SSIGs for reviews of existing standards*. The existing SSIG shall remain in place when a standard comes up for review. The annual announcement of standards coming up for review, as well as the placement of an announcement in *ANSI Standards Action* (for Official Methods and Standard Practices only), shall serve as notice to any interested parties to join any existing SSIG. A PINS submission, as described in 6.4.1.1, shall be submitted for all five-year reviews of Official Methods, Standard Practices, Standard Glossaries, and Standard Specifications and shall also be submitted for review of any standards, such as Provisional Methods, that may likely be upgraded to Official Method or Standard Practice status. No PINS submission is required for reviews of Classical Test Methods, since they are not eligible to be submitted to ANSI for consideration as a national standard.

6.4.1.4 *Cancellation of projects*. If a project for the review of an existing Standard or the development of a new standard is cancelled for any reason, or if the purpose of the project is changed in such a way that a PINS registration is no longer appropriate (for example, a decision to change the category of a standard to one where submission to ANSI as a national standard is not possible), the Standards Administrator shall advise ANSI that the project has been cancelled or changed and the PINS submission should be cancelled.

6.4.2 Subject Categories are used as a convenience to group sets of Standards into technical areas of interest. It shall be the responsibility of the members of each SSIG to notify the Standards Administrator if it is felt that the Subject Category for any particular Standard is incorrect. Any disagreements regarding the assignment of a Subject Category will be referred to the Q&SMC for resolution.

6.4.2.1 *Joint activities with other societies.* If a TAPPI SSIG wishes to develop Standards with standards-developing groups of other societies, a proposal to do so should be submitted to the Q&SMC for approval in accordance with these guidelines. The regulations governing TAPPI Standards shall apply in a case where the other society is not an ANSI-accredited standards developing organization (SDO); if the other society is an ANSI-accredited SDO, then either that society's regulations shall apply, or TAPPI's regulations shall apply.

6.4.3 SSIGs having jurisdiction over Standards are to be representative of producers, consumers, and general interest members with regard to the subject matter to which the Standards relate. In order to broaden the scope of expertise, the SSIG may wish to submit the proposed Standard to people in the paper industry or

related industries who can give added input. The minimum number of persons required for any SSIG is 10. It shall be the responsibility of the Working Group Chairman (WGC) (section 6.4.4) to work with the SSIG members to determine their interest in the subject of the SSIG based on the definitions in 6.4.3.1. The Standards Administrator will continually monitor membership within the SSIGs to ensure that the minimum number of 10 is also representative of various companies and interests (6.4.3.1). In no case may an SSIG have more than 50% of its members from any one of the categories as listed in 6.4.3.1. In the case of standards specifically devoted to measuring safety related issues, no more than 33% of the members may come from any one of the categories 6.4.3.1. Any problems in this regard will be forwarded to the Q&SMC by the Standards Administrator for resolution. SSIGs may be disbanded by the Q&SMC and their Standards either withdrawn or reassigned to another SSIG if they are found to deviate from the minimum membership or percentage composition as stated in these guidelines.

6.4.3.1. **Interest categories**. All permanent and/or voting members of the SSIGs shall be assigned an interest category based primarily upon their professional affiliation or work. In the modern paper industry, manufacturing facilities exist where wood is made into pulp, pulp, is made into paper, and paper is converted into some end use item. Modern printing and writing paper manufacturing facilities and modern tissue manufacturing facilities are given only by way of examples. Thus a manufacturing facility may contain production units devoted to the production of pulp, the production of paper, and the converting of paper into intermediate or finished manufacturing units. Members of SSIGs shall identify themselves based upon the functional unit of the larger organization to which they belong; pulpmill operator (producer), paper machine Administrator (producer), finished sheeting operator (converter), and so on. The categories for TAPPI SSIGs are defined as follows:

- *Producers of pulp or paper*: SSIG members working for a corporation or subunit of a corporation whose major activity is the production of pulp or paper.

- *Converters of pulp or paper*: SSIG members working for a corporation or subunit of a corporation whose major activity is the conversion of pulp or paper into some finished or intermediate manufactured state. Converters would include, but is not limited to, producers of corrugated roll goods, manufacturers of boxes, converters who buy rolls of tissue paper and convert it into finished saleable consumer goods, converters who use paper or similar materials to produce packaging of various kinds (including flexible packaging) and numerous similar producers of paper goods.

- *Suppliers of chemical or raw materials*: SSIG members who are working for a corporation or subunit of a corporation whose major activity is to supply raw materials or chemicals for the manufacture of pulp or paper.

- *Suppliers of manufacturing equipment, instrumentation and online controls*: SSIG members who are working for a corporation or subunit of a corporation whose major activity is to supply manufacturing equipment, instrumentation, or online controls for the manufacture of pulp or paper.

- *Service and general suppliers*: SSIG members who are working for a corporation or subunit of a corporation whose major activity is providing for producers of pulp and paper a service or any other commodity not included in the other supplier categories.

- *Commercial users of pulp or paper*: SSIG members who are working for a corporation or subunit of a corporation whose major activity is the use of paper, pulp, corrugated, packaging material, or other related product after it has been produced and further converted into some finished sheet or roll form or intermediate finished article of commerce. This includes printers or, in general, any entity using paper where that use does not generally fit under the term “converter.”

- *Marketers and Commercial Sellers*: SSIG members who are working for a corporation or subunit of a corporation whose major activity is the marketing or sales of pulp or paper. This might include but is not limited to companies whose focus is the wholesale or retail selling of paper and paper products including cut size paper, paper tissue products, artist paper supplies, paper merchants, recyclers, etc.

- *Consultants*: SSIG members who are independent contractors and who may provide consulting services to any segment of the industry.

- *Educators*: SSIG members who teach or are employed by an academic institution.

- *General Interest*: SSIG members who are not covered under any of the above categories; this category may include, but is not limited to, members affiliated with trade associations, professional societies, or government agencies.

6.4.4 After assignment of a proposed new standard to an SSIG, a new Standard will be developed by a working group (WG) under a chairman recruited by the Standards Administrator; often this chairman will be the individual or one of the group of individuals who proposed the new Standard. The working group chairman (WGC) may also develop a Standard alone (without additional working group members). If the WGC recruits additional WG members, these individuals may or may not be voting members of the SSIG, but any who are not and need to join shall confirm this interest with the Standards Administrator and be added as members of the SSIG. When developing a new Standard, the WGC must first check to see whether the proposed Standard duplicates or relates to any existing Standard. If it duplicates any existing Standard within TAPPI, the WGC must notify the Standards Administrator, who will determine if the WI should be revised or discontinued accordingly. If it duplicates Standards outside of TAPPI, the WGC should obtain copies of the related Standards (in most cases available from the Standards Administrator) and use this information in the development of the TAPPI Standard. The WGC, if working with a group and not alone, should reach consensus within the Working Group on any questionable points prior to finalizing the draft.

6.4.5 When the proposed new or revised Standard is a quantitative Test Method that produces a numerical result, the Test Method must contain at least a statement of the repeatability in a single laboratory if the Test Method is to be classified as Provisional or Official; a statement of reproducibility is also required for Official Test Methods. It is desirable, but not mandatory, to carry out an interlaboratory test program to develop a precision statement for reproducibility between laboratories. Questions have been raised when balloting Standards with regard to the expression of repeatability, the calculations in determining repeatability, and the amount of testing actually done in developing the precision statement. All precision information should be developed and precision statements formulated carefully in accordance with T 1200. Refer to Section 7.4.17 for a detailed description of the format of the precision statement..

6.4.6 The draft, as developed by the working group for a new Standard or prepared from the current existing Standard for a review of an existing method, is submitted by the Standards Administrator to the current voting members of the responsible SSIG for ballot via the online balloting system (Kavi). See Chart 1 in Appendix 5 for specific steps in the balloting process. No draft being submitted for a vote as a TAPPI Standard may contain any portions that are not part of the Standard to be approved through the full consensus process as outlined in these guidelines. The Standards Administrator must determine if the draft follows proper format and style as outlined in these guidelines and, for a new method, must consult with the WGC with changes that need to be made to conform to proper style before the draft is balloted. When a revised Standard is drafted, a brief summary of changes other than editorial made in the Standard must be included under Additional Information. When a draft is prepared for ballot, sections that have been changed since the last draft will be highlighted for ease of identification by the voters.

6.4.6.1 At the same time any draft is balloted to the SSIG, it must be also made available for interested parties to review. TAPPI members may access all drafts in ballot by requesting any draft currently in ballot from the Standards Administrator. Nonmembers of the SSIG, including TAPPI members or nonmembers, may obtain a complete listing of drafts currently being balloted by request from the TAPPI Standards Manager. Any interested party, including TAPPI members or nonmembers, who is not currently a permanent or voting member of the SSIG may request voting membership and a ballot from the Standards Administrator. When a new SSIG member joins during the balloting period, the balloting period deadline shall be extended to 45 days from the date the new member has joined. Comments received from either permanent or voting SSIG members or any other interested party at any time will be forwarded to the WGC, but comments submitted after the final ballot ~~45-day~~ deadline may not reach the developers or reviewers of the method in a timely enough fashion to be considered.

6.4.6.2 The Standards Administrator shall circulate a notice by email to the SSIG 10 business days prior to the deadline for any SSIG ballot to remind the voting members that their vote is requested.

6.4.6.3 A 51% return of all SSIG ballots is required within 45 days of the ballot date for a valid ballot. For the vote to be successful, there must be a 75% affirmative vote of the combined negative votes with comments and affirmative votes. If comments not related to the proposal are submitted with a negative vote, the comments shall be documented and considered in the same manner as submittal of a new proposal. Reasons for negative ballots and suggested revisions which will result in resolution of the negative must be given; negative ballots without reasons or negative ballots with comments unrelated to the item being balloted will be counted as "negatives without comment" and will be counted in the tabulation of the percent return, but will not be counted in the tabulation of the percent of affirmative votes.

6.4.6.4 Ballots must be returned to the Standards Administrator who will determine if a valid ballot, as outlined in 6.4.6.3, has been accomplished.

6.4.6.5 For a new method, the ballot results, together with copies of all ballots with comments, as well as comments received from nonvoting SSIG members as a result of the initial public notice of an upcoming review of an existing Standard (see Section 6.8.1.1), and a list of related Standards, will be sent to the Working Group Chairman for review and resolution of negatives and comments. An effort to resolve all votes accompanied by comments related to the ballot under consideration shall be made, and each such commenter (voter) shall be advised in writing (including electronic communications) of the disposition of the comment and the reasons. If resolution is not achieved, each such commenter shall be informed in writing that an appeals process exists (see Section 6.4.8).

6.4.6.6 For an existing Standard under review that receives the proper percent return and positive vote as outlined in 6.4.6.3, and which also receives no negatives or comments, the Standard may then proceed to the Standards Advisory Review Group (SARG) as outlined in 6.4.7. For an existing Standard under review that does receive votes with comments or negatives, the Standards Administrator will review the comments, contact a member of the SSIG, request that member to serve as Working Group Chairman, and then send the ballot results, together with copies of all ballots with comments, copies of all comments received through public review, and a list of related Standards, to this WGC.

6.4.6.7 All comments, from either affirmative or negative ballots, must be resolved by the WGC as outlined in Section 9 of this manual. See the Chart 2 in Appendix 5 for details on resolution of negatives. If the ballot has not received the required percentage for validation, a new draft must be prepared and balloted to the SSIG. If a valid ballot is achieved and the ballot is successful as described in 6.4.6.3, then the next draft may proceed to the Standards Advisory Review Group (SARG) as outlined in 6.4.7, unless the Working Group Chairman requests a SSIG reballot. All negative votes and comments collected during the review of a new or

existing standard, submitted by SSIG members or any other interested parties, must be resolved and such resolution documented prior to the SARG review. All objectors will be provided with a written disposition on their comments with reasons therefore.

6.4.6.8 *Votes on sections or particular items.* If, after at least one ballot on a full draft (in the case of an Official Test Method, Standard Practice, Standard Specification, Standard Glossary, or Standard Guideline) or two ballots on a full draft (in the case of five-year review of a Provisional Test Method or a ten-year review of a Classical Test Method) have been completed, the WGC has the option of balloting particular sections or items to gather approvals or comments. Such items may include, but are not limited to, polls on resolution of comments or negatives. The WGC may work with the Standards Administrator to customize a ballot format with an explanatory letter for balloting such sections or items. The requirements for percent return and percent affirmative on such ballots shall be the same as for ballots of complete drafts. Although such a ballot may be on one particular issue, the full draft shall be distributed with the ballot, not just the part that is being balloted; this will allow new comments unrelated to the item balloted to be made, although per these guidelines, the WGC may address, but is not required to address, unrelated comments. Comments that are unrelated to the section or item balloted will be counted as abstentions for quorum purposes only. It is permissible to have a ballot on a particular section or item as the last SSIG ballot prior to SARG review. Ballots on specific items are required to be posted for public review the same as for any ballots of full drafts. After the votes have been tabulated, negative voters shall be advised in writing of the disposition of their comments and the reasons therefore, and, if resolution is not achieved, each unresolved negative voter shall be informed in writing of their right to initiate an appeal prior to the upcoming SARG meeting. Because there is a requirement that a standard be submitted for the SARG agenda a minimum of 50 days prior to the meeting, 50 days is the minimum time period for appeals to be filed.

6.4.6.9 Reports sent to a Working Group Chairman shall be returned to the Standards Administrator within 90 days with notice in writing of resolution of negatives and comments, using the form for Resolution of Comments and Negatives. A Working Group Chairman may submit to the Standards Administrator in writing a request for an extension of the 90-day period to be forwarded to the Q&SMC Chairman, citing reasons why an extension is needed. The Q&SMC Chairman may set a new deadline date based on this information and so notify the Working Group Chairman and the Standards Administrator.

6.4.6.10 If the deadline for the return of the WGC report has passed, the Standards Administrator shall notify the WGC that the return of the report is delinquent. If no action is taken before the next Q&SMC meeting, the delinquent return will be reported to the Q&SMC for resolution. The Q&SMC may, by ~~letter~~ ballot via either email or letter or vote at a meeting, reclassify or withdraw the Standard if the Standard in question is a revision of a Standard already on the books. There is no action for the Q&SMC to take if the document in question is a new Standard.

6.4.6.11 If a Standard has been withdrawn by the Q&SMC because of a lack of action by the responsible WGC and/or SSIG, it may be reinstated only after the responsible SSIG has opened a new WI, and the WGC has returned the report and procedures for approval as outlined in paragraphs 6.4.6 and 6.4.7 are followed. A reinstated Standard may be assigned the same number that it had at the time it was withdrawn.

6.4.6.12 A time extension will be permitted to the Working Group Chairman only in extenuating circumstances and will require the approval of the Q&SMC. If a WGC has difficulty resolving one or more negatives or comments, then he/she should note this appropriately on the "Resolution of Comments and Negatives" form (see Section 9.5 of these guidelines) and request a vote on the specific negative(s) or comments at a meeting or by a ballot via either email or letter to the voting members of the responsible SSIG. If a vote is taken at a meeting of the SSIG, at least 30 days notice must be given to the members of the SSIG. Any voting member who may be unable to attend the meeting may cast a vote by sending the vote to the Standards Administrator before the meeting or within three business days after the meeting. Proxy votes are not allowed.

If a vote is taken at a meeting, a quorum shall be considered to be at least 51% of the SSIG members present in person or having submitted their votes to the Standards Administrator either before or within three business days after the meeting, and a majority vote of those present or those submitting before or within three business days after the date of the meeting will determine the acceptance or rejection of the negative or comment. If a vote is taken by ballot via either email or letter, 51% of the voting SSIG members must return a ballot in order to be a valid vote, and a majority of those voting, not counting abstentions, will determine the acceptance or rejection of the negative or comment. The WGC shall then make adjustments accordingly on the next draft and return the report to the Standards Administrator within 30 days after the vote. If this 30-day period passes and no report has been received, then procedures in 6.4.6.10 are to be followed.

6.4.6.13 If a vote was held as described in section 6.4.6.12 to address an unresolved negative or comment, after the Standards Administrator has received the updated draft, a written summary of all unresolved negatives or comments, attempts at resolution, and summarized results of the vote conducted in 6.4.6.12 will be recirculated to the SSIG and any objectors from the public.

6.4.6.14 When a draft has met all the requirements for a valid ballot, then it shall be submitted to SARG as outlined in Section 6.4.7.

6.4.7 *Drafts and information to be provided to the Standards Advisory Review Group (SARG).*

6.4.7.1 A record of the SSIG ballots and reconciliation of the negative ballots and comments will be compiled and retained by TAPPI. When all requirements for a valid and successful SSIG ballot are achieved, then the revised Standard, with changes highlighted, shall be submitted to the voting members of the SSIG as the proposed final draft to be submitted to the Standards Advisory Review Group (SARG). The voting members of the SSIG and any other individuals who commented on the draft shall be informed at the time of presentation of the SARG draft of how negative comments have been resolved, including unresolved objections with attempts at resolution from the public and SSIG member. The voting members will be informed that they have an opportunity to respond, reaffirm or change their most recent vote after consideration of this information. The deadline to respond to the SARG draft, including a change in vote, shall be 30 days from the notification. Negative voters shall be specifically asked if their votes can be changed to affirmative based on the resolution of their comments in the final draft for SARG. SSIG voting members must submit changes to their votes in writing to the Standards Administrator.

6.4.7.2 After the 30-day period for SSIG voting members to respond to the SARG draft has passed, the Standards Administrator shall post the draft on the SARG webpage and shall send a notice to the voting members of the SSIG and to any other individuals who commented on the draft that the final draft of the standard to be submitted to SARG has been posted. If any voting member of the SSIG or any other individual who commented on the draft feels that any changes shown in the final SARG draft posted on the web have resulted in a **new** error or problem with the draft, then that person may file an appeal to the SARG through the Standards Administrator as described in 6.4.7. Appeals by any SSIG member or any other interested party may be also be made according to section 6.4.8. If an appeal to SARG is submitted at this stage from anyone receiving the notice of the SARG draft that contains one or more comments that are duplicates of comments that had been received at an earlier stage and which have already been resolved in accordance with these procedures, including but not limited to a vote by the SSIG to find a negative comment nonpersuasive as outlined in 6.4.6.12 and 9.6.1, the Standards Administrator shall submit such comments to SARG with a report providing all details showing that the comments have already been resolved. If the SARG, after discussion at their meeting, agrees that the comments have been successfully and appropriately resolved previously, they shall instruct the Standards Administrator to send a notice in writing to any individuals submitting such comments with an explanation that the comment has already been resolved and/or voted nonpersuasive by the SSIG in accordance with 6.4.6.12. If the SARG, after discussion at their meeting, does not agree that the comments have been successfully and appropriately resolved previously, then SARG shall reject the approval of the final draft

and shall return the draft to the WGC, who shall attempt to properly resolve the comments and resubmit a new draft for another SSIG vote.

6.4.7.3 Any appeals as outlined in 6.4.8 shall be forwarded to the SARG by the Standards Administrator. The SARG shall act on these appeals in the same manner as described in 6.4.8.

6.4.7.4 The information provided to the SARG by the Standards Administrator shall include a report showing a summary of the ballot results and resolution of comments and negatives from the most recent SSIG ballot and a summary of changes made from the last version of the standard. The report shall also indicate if any SSIG members have changed their votes from the last draft balloted as outlined in 6.4.8.1. Any SARG member has the right to request from the Standards Administrator copies of the most recent SSIG ballots containing comments, copies of comments received from the public review, and/or a copy of the Working Group Chairman's report and resolution of comments and negatives. An exception would be an initial review ballot of an existing Standard which did not receive any comments or negatives, but otherwise achieved the requirements for a valid ballot at outlined in 6.4.6.3; such a Standard would proceed to SARG without a report from a Working Group Chairman.

6.4.7.5 When a final draft is submitted for approval by SARG, an announcement shall be posted in *ANSI Standards Action* in order to provide an opportunity for public comment. The comment period shall be one of the following options:

1. A minimum of thirty days if the full text of the revision(s) can be published in *Standards Action*;
2. A minimum of forty-five days if the document is available in an electronic format, deliverable within one business day of a request, and the source (e.g., URL or an E-mail address) from which it can be obtained by the public is provided to ANSI for announcement in *Standards Action*; or
3. A minimum of sixty days, if neither of the aforementioned options is applicable.

Since there exists a requirement (see Section 6.4.10.2) which mandates that Standards ready for SARG votes at a meeting must be added to the SARG agenda and posted on the TAPPI website no later than 45 days prior to the meeting, options 1 or 2 are preferable and shall be attempted in most cases. If Option 3 is the only possible option, and if the Standard in question is not submitted to SARG more than 60 days prior to a scheduled meeting, then that standard will not be able to be added to that meeting’s agenda and will have to be held for the next SARG meeting in order to achieve the 60-day comment period requirement. Any objectors from the ANSI public review or from SSIG members will receive a written disposition and the reasons therefore. In addition, any unresolved objectors from public review or SSIG members shall receive a written notice of the right to appeal prior to the upcoming SARG meeting. Any substantive changes made to the draft as a result of the ANSI public review shall require another ballot to the SSIG. Another ANSI public review shall be posted in ANSI Standards Action when the draft is once again ready to be submitted to SARG.

6.4.8 *Appeals.* Persons who have directly and materially affected interests and who believe they have been or will be adversely affected by a standard within a SSIG's jurisdiction, or by the lack thereof, and voting members of SSIGs who believe that their comments have not been appropriately resolved in accordance with these guidelines shall have the right to appeal substantive or procedural actions or inactions relevant to the process of approval or development of TAPPI Standards.

6.4.8.1 *Complaint*. The appellant shall file a written complaint with the Standards Administrator within fifteen days after the date of notification of submission of a final draft to SARG (as described in 6.4.7) or at any time with respect to inaction. The complaint shall state the nature of the objection(s) including any adverse effects, the section(s) of these procedures or the standard that are at issue, actions or inactions that are at issue, and the specific remedial action(s) that would satisfy the appellant's concerns. Previous efforts to resolve the objection(s) and the outcome of each shall be noted.

6.4.8.2 *Response*. The Standards Administrator shall forward the complaint to the WGC for the particular standard. Within thirty (30) days after receipt of the complaint, the WGC shall respond in writing to the appellant, specifically addressing each allegation of fact in the complaint to the extent of the WGC's knowledge.

6.4.8.3 *Hearing*. If the appellant and the WGC are unable to resolve the written complaint informally in a manner consistent with these procedures, the WGC shall notify the Standards Administrator, who shall subsequently schedule a hearing with the Standards Advisory Review Group (SARG) on a date agreeable to all participants, giving a least ten working days notice. If the appellant determines that any current member of SARG has any real or apparent conflict of interest with the subject of the appeal or the person filing the appeal, then that member of SARG may be asked to recuse himself/herself from the appeal. If enough SARG members recuse themselves so that the number of remaining members are less that three (3), then the Q&SMC shall appoint an appropriate ad hoc SARG member or members to act upon this particular appeal.

6.4.8.4 *Conduct of the hearing*. The appellant has the burden of demonstrating adverse effects, improper actions or inaction, and the efficacy of the requested remedial action. The respondent has the burden of demonstrating that the committee or sponsor took all actions in compliance with these procedures and that the requested remedial action would be ineffective or detrimental. Each party may adduce other pertinent arguments, and members of the appeals panel may address questions to individuals. Robert's Rules of Order (latest edition) shall apply to questions of parliamentary procedure for the hearing not covered herein. The aforementioned hearing may be conducted via meeting or teleconference.

6.4.8.5 *Decision*. The appeals panel shall render its decision in writing to the appellant within thirty (30) days, stating findings of fact and conclusions, with reasons therefore, based on a preponderance of the evidence. The panel may dispose of the case in any of the following manners:

- Finding for the appellant and remanding the action to the WGC with a specific statement of the issues and facts in regard to which fair and equitable action was not taken.

- Finding for the WGC, with a specific statement of the facts that demonstrate fair and equitable treatment of the appellant and the appellant's objections.

- Finding that new, substantive evidence has been introduced, and remanding the entire action to the WGC and/or the SSIG for appropriate reconsideration.

6.4.9 Approval by the SARG indicates that the SARG members feel that there has been acceptable resolution of all negative ballots and comments, including non-persuasive negatives. It is the responsibility of the SARG to determine that all negatives and comments have been satisfactorily resolved and to act on appeals from TAPPI members as outlined in 6.4.8 and 9.6.2. If such appeal seems substantive to the SARG member, he/she should vote negative and state reasons. If all comments have been successfully resolved, the SARG member will generally vote affirmative. However, if the majority of the SARG members agree that a substantive technical error in a Standard has been found at the SARG review level, then the SARG shall return the method to the appropriate SSIG for further resolution.

6.4.10 The SARG Review may be handled in either one of two ways as outlined in 6.4.10.1 or 6.4.10.2.

6.4.10.1 Drafts ready for SARG review may be sent at any time to the members of the SARG, who will be requested to return their ballots before the end of the published comment period as submitted for posting in

ANSI Standards Action as required in section 6.4.7.5 of these guidelines. A majority vote of the SARG members is required for approval of a Standard by ballot.

6.4.10.2 Drafts ready for SARG review may be distributed to the SARG and discussed and voted upon at a meeting of the SARG. The SARG is required to meet twice a year in order to review drafts submitted in this fashion and to address appeals and other issues related to the approval of Standards. The meetings of the SARG are open to any TAPPI members or any other parties interested in the Standards program. An agenda for the meeting will be posted on the TAPPI website at least 50 days prior to the meeting so that interested parties may attend or submit relevant material ahead of time. Periods for comments on SARG drafts shall be posted in *ANSI Standards Action* in accordance with Section 6.4.7.5 of these guidelines; all of the comment periods for item on an upcoming SARG agenda must end at least five (5) days prior to the scheduled SARG meeting.

> ***Example:*** For a SARG meeting scheduled for May 1, any Standard ready for SARG must be submitted to the Standards Administrator no later than March 12 (50 days before the meeting). The end of the comment period for a Standard submitted on the last day of the deadline shall be April 11 (30 days from March 12) if the revisions can be published in ANSI Standards Action, or shall be April 26 (45 days from March 12) if the draft is deliverable in electronic format as outlined in 6.4.7.5. This will allow five additional days prior to the SARG meeting to communicate any comments received to the SARG. If a Standard is submitted at a time where the comment period cannot end at least five days prior to the upcoming SARG meeting, then that Standard may not be added to the agenda for that SARG meeting and will have to be held for the agenda of the following SARG meeting.

6.4.11 A quorum of the SARG at a meeting shall be at least 50% of its members. A majority vote of those present at the meeting shall be required to approve final Standards. After approval by SARG, the Standards Administrator will prepare the approved draft for publication and will submit the Standard to TAPPI PRESS. The Effective Date of Issue will be noted in the Standard as the date on which final SARG approval was achieved. The designation date in the suffix of Standard numbers shall refer to the year in which final approval of the method was received. The Standards Administrator shall send a notice of availability for publication in the TAPPI official newsletter for Standards and TIPs action, the *Standards and TIPs Action Report* (STAR). See Chart 3 in Appendix 5 for an outline of the production process for printing Standards. The WGC will be sent a proof copy of the Standard for review prior to publication.

6.4.12 If any negative votes on a Standard are cast at SARG, the Standard will not be approved, and the results of the vote, with reasons for negatives, shall be sent to the WGC, who will contact those SARG members who cast the negative votes and work out a resolution of the comments with them. If the WGC and the SARG members who voted negative on approval of the final draft determine that the negative was due to a procedural error that can be resolved by the WGC without making substantive changes in the draft, then the WGC shall: (1) rectify the error(s); (2) request that notification of any resulting editorial changes, if any are required, or notification of the rectification of the error(s) be sent to the SSIG from the Standards Administrator; and (3) resubmit the final draft, with any editorial changes deemed necessary to the Standards Administrator for placement on the next agenda of SARG for final approval. If the WGC and the SARG members who voted negative determine that the resolution of the negative votes will result in substantive changes in the Standard, the WGC shall prepare a new draft for another ballot to the SSIG.

6.4.13 After new or revised Standards have been published, the Standards Administrator will send copies to the Working Group Chairman and the Working Group for the Standard. The Standards Administrator shall also send copies to other Working Group Chairmen who are responsible for other Standards currently in review that have references to the newly printed Standard. If an existing Standard that is not under current review contains references to the newly published Standard, then the Standards Administrator shall keep this information on file so that it can be noted and addressed when the Standard comes up for review. It will be the responsibility of WGCs to be aware of revisions of Standards that have been referenced in other Standards so

that subsequent reviews may incorporate any changes that may be affected by the revisions to referenced Standards. The Standards Administrator will maintain a cross-reference list showing which Standards are referenced in other TAPPI Standards and will revise this list as necessary upon revision of a Standard or publication of a new Standard.

6.5 Corrections and revisions

6.5.1 Correction of an existing Standard shall be made by the Standards Administrator when a error has been discovered in a Standard. Such corrections, generally referred to as "editorial corrections," include errors in printing, format, spelling, punctuation, as well as improvements in clarity of expression or to reduce or eliminate ambiguity, but may not include any changes in wording that would in any way make substantive changes in the Standard. The general rule for distinguishing between an editorial correction and a more substantive revision that may need to be balloted is that a correction should be restricted to restoring the text in a published Standard with the text that was intended when the final draft was submitted to SARG for final approval.

6.5.1.1. When a correction to a Standard has been proposed, the Standards Administrator shall notify the voting members of the SSIG who last approved the Standard and shall identify the nature of the correction and request comments within two weeks, if any.

6.5.1.2 After the deadline for return of comments by the voting members of the SSIG has passed, the Standards Administrator shall distribute the proposed correction to the SARG for a vote to determine if the correction is indeed an editorial correction and does not require an SSIG vote. The Standards Administrator shall also report to SARG any comments from the voting members of the SSIG objecting to the correction. A majority vote of the SARG shall determine if the change is appropriate as a correction. If the SARG votes that the change is more substantive, then the Standards Administrator shall recruit a WGC, who may be the person who proposed the change, to initiate a Work Item for a ballot for revision to the SSIG. If the SARG rejects any objections or comments from the SSIG, then the Standards Administrator shall notify in writing the voting member of the SSIG who submitted the comments. If the voting member of the SSIG wishes to appeal the SARG decision to the Q&SMC, the member shall notify the Standards Administrator, who will place the item on the next Q&SMC meeting.

6.5.1.3 The corrected version shall be printed with a notation designating the year of correction, and a notation shall be placed on page one indicating the nature of the correction made; the number of designation and effective date of issue of the Standard, however, shall not change, so that the automatic review of the Standard will still be initiated four years from date of issue for Official or Provisional Test Methods, Standard Practices, Standard Specifications, Standard Glossaries, or Standard Guidelines, or nine years from the date of issue for Classical Test Methods.

6.5.2 When revisions to an existing Standard are prepared, the working group is responsible for determining whether or not the resulting revision produces test results which are statistically lower or higher than before revision, or the Standard it is proposed to replace, and for establishing and stating the extent of such changes in test results, especially in average test levels which may result from changes in the Standard. The effect of a revision on average test results or precision should be reported under Additional Information.

6.6 Reclassification of Standards

6.6.1 A Standard may be reclassified by the same procedure as that in use for approval of a Standard of its class. The ballot for reclassification to the appropriate SSIG shall include a full explanation of reason for reclassification.

6.6.2 Upon approval, the notice of reclassification together with reasons will be published in the TAPPI official newsletter for Standards and TIPs action, the *Standards and TIPs Action Report* (STAR).

6.6.3 Classical Test Methods will continue to be part of the full set of Standards available from TAPPI PRESS.

6.6.4 Titles of all Standards will be indexed in the numerical index of TAPPI Standards, including withdrawn Standards with additional information (for example, replacement by another Standard) noted.

6.6.5 Withdrawn Standards will be kept on file at TAPPI and will be available upon request. The Standards Administrator should have the reason for withdrawal inserted on the document to provide this information to persons requesting copies.

6.7 Miscellaneous procedures

6.7.1 *Reports on Work Items.* The Standards Administrator shall prepare a report to be distributed at least twice a year to the chairmen of all technical groups within TAPPI which have an interest in appropriate Subject Categories of Standards. This report shall show the status of all open Work Items within the technical group's particular area of interest.

6.7.2 *Initial drafts of automatic review ballots*. The first draft on an automatic review of a Standard shall not include the name of a Working Group Chairman, even if a volunteer for that position had already indicated an interest in taking on this assignment. Subsequent drafts shall contain the name of the WGC. The first draft of a proposed new Standard shall contain the name of the WGC.

6.8 Review of Standards

6.8.1 Each Official Test Method, Provisional Test Method, Standard Practice, Standard Specification, Standard Glossary, or Standard Guideline shall be reviewed by the responsible SSIG at least once every five years; every Classical Test Method will be reviewed by the responsible SSIG every ten years. The Standards Administrator will automatically ballot each responsible SSIG for reaffirmation or revision of each Standard requiring review four years (or nine years in the case of a Classical Test Method) following the last effective date of issue. A Work Item number will be initiated automatically by the Standards Administrator for each Standard requiring review. The Standards Administrator shall also recruit a member of the SSIG to serve as WGC after the initial review ballot has been completed (see Section 6.4.6.4). The five-year review requirement for each Official Test Method, Provisional Test Method, Standard Practice, Standard Specification, Standard Glossary, or Standard Guideline satisfies the ANSI requirement for periodic maintenance as described in 4.7.1 of the ANSI Essential Requirements. Classical Methods are not submitted to ANSI to become American National Standards.

6.8.1.1 A Public Notice must be distributed to the membership of TAPPI and to the public, indicating the Standards that are due for review over an upcoming period of time (i.e., the time prior to the next scheduled public notice). The notice shall indicate how an individual can elect to participate in the review of Standards by requesting voting membership in the appropriate SSIG. This public notice will be distributed in the official TAPPI newsletter for Standards and TIPs action, the *Standards and TIPs Action Report* (STAR), in the *ANSI*

Standards Action newsletter, and will be posted on the TAPPI web site. Any comments that are received as a result of the announcement of upcoming reviews of Standards shall be considered in the same manner as comments received when the first draft of the Standard is sent to the voting members of the SSIG for vote; see Section 6.4.6 for these procedures.

6.8.1.2 If a large number of Standards (five or more) are due for review on the same date, the Standards Administrator may distribute the dates for balloting over a period of time in order to prevent a large number of ballots from being initiated on the same date. These changes in review balloting dates shall be at the discretion of the Standards Administrator, but no method shall be delayed for review ballot more than six months later than the normal review date as determined by the Effective Date of Issue.

6.8.1.3 The balloting process is the same as outlined in 6.4.6 through 6.4.7.

6.8.1.4 For Official Test Methods, Standard Practices, Standard Specifications, Standard Glossaries, and Standard Guidelines, if the WGC determines that the consensus of the ballot is that no substantive changes are necessary, and that a valid ballot as outlined in 6.4.6.3 has been achieved, then the Standard shall proceed to SARG Review as outlined in Sections 6.4.7 through 6.4.10.

6.8.1.5 If the WGC determines that reaffirmation of an Official Test Method, Standard Practice, Standard Specification, Standard Glossary, or Standard Guideline is not granted and a revision is indicated, then the revision must be completed by the WGC and any Working Groups members he/she chooses to recruit within 90 days from the submission of the voting results to the WGC from the Standards Administrator.

6.8.1.6 After review, each Official Test Method, Standard Practice, Standard Specification, Standard Glossary, or Standard Guideline is to be reaffirmed (with or without editorial corrections), revised, or reclassified, following the procedure set up for a newly proposed Standard.

6.8.1.7 At five-year review, each Provisional Test Method must be either reclassified as an Official Test Method or withdrawn. In the review of a Provisional Test Method, careful consideration is to be given to its worthiness to be advanced to an Official Test Method. When the "state of the art" is such that advancement to an Official Test Method does not seem advisable, the responsible SSIG must withdraw the Provisional Method. All of the options for upgrading or withdrawal of Provisional Test Methods will appear on the automatic review ballot. The WGC will determine which direction should be taken (upgrade or withdrawal) for the second ballot to the SSIG. Only after at least the second SSIG ballot in the review of the Provisional Test Method may the method be advanced to SARG Review.

6.8.1.8 *First review of Classical Methods.* Each Classical Test Method must be reviewed on a 10-year basis, with the initial SSIG ballot started nine years from the last effective date of issue. At the first ten-year review after the Standard has initially been placed in the Classical Method category, each Classical Test Method must be either (1) reconfirmed as a Classical Test Method with only minor editorial changes allowed or changes to correct errors in the method; (2) revised and upgraded to Official or Provisional Test Method status; or (3) withdrawn. All of the options for reconfirming, revising, or withdrawing the Classical Test Method shall appear on the automatic review ballot. When the ballot is tabulated, if there are no comments to be resolved, and if there are no votes for withdrawal, revision, or upgrading to Official Method status, the Standards Administrator may consider the method to have been reaffirmed, and it may be added to the next SARG agenda for approval. If there are comments to be resolved, or if there are votes to upgrade or revise the method, then the Standards Administrator shall assign a WGC. The WGC will determine which direction should be taken (reconfirmation, revision, upgrade, or withdrawal) for a second ballot to the SSIG. In cases where there are comments to be resolved, and where there are votes for withdrawal or revision and upgrading to Official Method status, then at least a second ballot to the SSIG is required before advancing to SARG.

6.8.1.9 *Subsequent reviews of Classical Methods*. After the first ten-year review of a Classical Method has resulted in either revision or reaffirmation of the method (i.e., not withdrawal), the initial ballot on subsequent ten-year reviews shall be a ballot for withdrawal. Any voters who object to the Classical Method being withdrawn shall vote negative and state reasons. When the ballot is tabulated, if there are no comments to resolve and no objections to the withdrawal, the Classical Method shall be placed on the SARG agenda for withdrawal. If there are objections, then a WGC must be assigned by the Standards Administrator to determine the next action, which may be another ballot to withdraw or may be a ballot to revise or reaffirm the Classical Method.

6.8.2 *Results from failure to complete a timely review*

6.8.2.1 If no action is taken by the responsible SSIG and/or WGC for five- or ten-year review, as appropriate, after a review of a Standard is initiated, the Quality and Standards Management Committee will consider the problem and decide what action to take (e.g., reclassification, withdrawal, extension of review time, etc.).

6.8.2.2 If the consensus of the initial ballot on a Provisional Test Method is to upgrade as Official, then the revision and upgrade must be completed before the Standard is seven years old. Provisional Test Methods not revised, upgraded or withdrawn before the seven-year deadline will be automatically withdrawn (i.e., no Q&SMC action necessary). The Standard may only be reinstated by opening a new Work Item and following the procedure outlined for the approval of a new Standard; a reinstated Standard may be assigned the same number that it had at the time it was withdrawn.

6.8.2.3 If the consensus of the initial ballot on a Classical Test Method is to upgrade to Official or Provisional status, then the revision and upgrade must be completed before the Standard is seven years old. Classical Test Methods not revised, upgraded or withdrawn before the seven-year deadline will be automatically withdrawn (i.e., no Q&SMC action necessary). The Standard may only be reinstated by opening a new Work Item and following the procedure outlined for the approval of a new Standard; a reinstated Standard may be assigned the same number that it had at the time it was withdrawn.

6.8.2.4 If no action is taken within six months by the responsible SSIG after a WI for a new Standard has been initiated, and no request for extension has been requested and granted, then the WI will be closed.

6.8.3 *Early review*. An early review may be initiated at any time by any member of the SSIG for an existing Standard by notifying the Standards Administrator. Early reviews are frequently initiated when new technologies warrant a timely revision of the Standard or when technical errors have been discovered in existing Standards. The procedure to follow after the Standards Administrator assigns a Work Item number to the early review is the same as for an automatic review.

6.9 Compliance with ANSI Policies

6.9.1 TAPPI shall comply with the *ANSI Essential Requirements: Due process requirements for American National Standards*, and the *ANSI Procedures for the National Adoption of ISO and IEC Standards as American National Standards*, which shall include the ANSI Patent Policy and the ANSI Commercial Terms and Conditions Policy.

6.9.2 TAPPI, when appropriate, shall use the *ANSI Procedures for National Adoption of ISO and IEC Standards* whenever a project is initiated to adopt an existing ISO standard as a national standard.

6.9.3 Any user of these guidelines may request information on the ANSI documents mentioned in 6.9.1 and 6.9.2 from the TAPPI Standards Administrator.

6.10 Retention of records

6.10.1 Files and records regarding the development of new Standards or the review of existing Standards shall be maintained in hard copy until a new Work Item has been opened for the next review cycle. When the new Work Item has been opened for the review of the Standard, the files relevant to the immediately preceeding Work Item shall be electronically preserved. Records shall be retained for one complete standards cycle, or until the standard is revised. Records concerning withdrawals of all American National Standards shall be retained for at least five years from the date of withdrawal or for duration consistent with the audit schedule.

6.10.2 TAPPI does not set any parameters for purging of any files that have been preserved electronically. It shall be TAPPI policy, however, that if at any time old records need to be purged to free storage space, TAPPI shall retain, at a minimum, Standards files that are both currently active (i.e., open Work Items for development or review of a Standard) and the files for the immediately preceeding Work Item, if any, relevant to each Standard.. This policy satisfies the ANSI requirements for record retention for all Standards which are maintained under the periodic maintenance option (see 6.8.1).

6.11 Submission of TAPPI Standards to become American National Standards

6.11.1 As long as TAPPI is accredited as an American National Standards Developer by ANSI, any published Standard, except for Provisional Test Methods and Classical Methods, may be submitted to ANSI for publication as an American National Standard (ANS). The ANSI Board of Standards Review (BSR) shall determine if the Standard was published in accordance with the criteria as outlined in the publication *ANSI Essential Requirements: Due process requirements for American National Standards*.

6.11.2 *Selection of TAPPI Standards to be submitted as American National Standards*. After final approval for a new, revised, or reaffirmed Standard has been achieved at SARG level, the Standard shall be submitted to the Quality and Standards Management Committee (Q&SMC) for a vote to submit the Standard to ANSI as an American National Standard (ANS). A return of 51% of the Q&SMC votes is required, and approval by at least 75% of those voting is required to submit a Standard to ANSI. If the Q&SMC rejects a Standard for submission, the SSIG for the Standard shall be notified so that they may appeal the decision to Q&SMC.

6.11.3 A new TAPPI standard or a revision or reaffirmation of a TAPPI Standard that has been selected as a candidate to become an ANS, must be submitted to the secretary of the BSR within one (1) year from the close of the comment period listed in *Standards Action* using the appropriate form provided by ANSI, unless TAPPI notifies the secretary of the BSR in writing of good cause for a different schedule for submittal. Failure to make the submittal within two (2) years from the close of the comment period listed in *Standards Action* shall require consideration by the BSR, i.e., withdrawal, extension for cause, or another listing in *Standards Action*.

6.11.4 A standard that has been approved as an American National Standard shall have its cover or title page marked with an approval logo furnished by ANSI or the words “an American National Standard.” In accordance with Section 6.4.6, no TAPPI Standard may contain any portions that are not officially part of the Standard or have not been submitted through the consensus process and public review as outlined in these guidelines. The number of the Standard, including the suffix, as described in Sections 4.1.1.6, 4.1.1.7, and

4.1.1.8, shall meet the requirement that American National Standards shall be identified by a unique alphanumeric designation (e.g., ANSI/TAPPI T 400 sp-06).

6.12 Interpretations policy

6.12.1 TAPPI shall maintain an interpretations policy, which shall be filed with ANSI upon accreditation or reaccreditation of TAPPI as an ANSI-accredited standards developer. Official interpretations of American National Standards submitted by TAPPI shall be made only by TAPPI. ANSI shall not issue, nor shall any person have the authority to issue, an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretations addressed to ANSI shall be referred to TAPPI.

6.12.2 Requests for interpretation of TAPPI standards must be received in writing. Responses to these requests will be delivered in writing as well. When TAPPI receives a request for an interpretation of a standard, the most recent WGC of the appropriate SSIG shall be asked to provide the interpretation or to suggest another technical expert to provide the interpretation. If for any reason, the most recent WGC is unable to act in this regard, then the entire SSIG shall be contacted to find a member who can provide the appropriate interpretation.

6.12.3 The individual writing the response to requests for letters of interpretation shall forward the response to the Standards Administrator, who will review the response and seek guidance from others if there appears to be technical issues and/or conflicts with the guidelines. When the response preparer and the Standards Administrator agree on the response, the Standards Administrator will forward the response to the individual requesting the interpretation and will publish the request letter and the TAPPI response letter in the next issue of the *STAR* newsletter.

6.13 Additional information

6.13.1 For additional operating guidelines other chapters of this manual as well as the following Standards should be consulted.

6.13.1.1 T 1200 “Interlaboratory Evaluation of Test Methods to Determine TAPPI Repeatability and Reproducibility.” If an interlaboratory study is planned, a copy of T 1200 may be obtained upon request from the Standards Administrator.

6.13.1.2 T 1205 “Dealing with Suspect (Outlying) Test Determinations.”

6.13.1.3 Useful Methods.

6.13.1.4 TAPPI T 1210 or TAPPI TIP 0800-01 “Units of Measurement and Conversion Factors.”

6.13.1.5 TAPPI Antitrust Policy and Compliance Procedures. See Appendix 2.

7. Format and Style of TAPPI Test Methods and Standard Practices (see Section 8 for Specifications, Glossaries, and Guidelines)

7.1 Scope

7.1.1 The recommended format and general style of TAPPI Test Methods are described in this section. It is intended to establish and maintain uniformity among TAPPI Test Methods and is to be used in writing new or revising existing Test Methods. Requirements relative to Test Methods are also applied to Standard Practices, except where specific differences are noted.

7.1.2 A TAPPI Test Method, as defined in Section 4, typically includes a concise description of an orderly procedure for determining a property or constituent of a material, an assembly of materials, or a product. The directions for performing the test should include all of the essential details as to apparatus, test specimen, procedure, and calculations needed to achieve satisfactory precision.

7.1.3 Standard Practices are accepted procedures or guidelines for the performance of one or more operations or functions associated with Test Methods. If a Standard covers the evaluation of pulp, paper, packaging, or related products, or of materials that possess a property of special or unique importance to the pulp, paper, packaging, and related industries, and requires the reporting of qualitative or quantitative observations that have been made on test specimens as a result of application of the Procedure in the Standard, and those qualitative or quantitative observations may reasonably be expected to vary as a function of the material being subjected to the Procedure, then the Standard is, in fact, a Test Method and must be categorized, titled, and styled as such.

7.1.4 A TAPPI Test Method should represent a consensus as to the best test procedure for the intended use. It should be supported by experience and adequate data obtained from cooperative tests.

7.1.5 In order to be current, Test Methods require periodic review to determine whether revisions are desirable as the result of technological advances in manufacturing, testing, and use requirements.

7.1.6 TAPPI Test Methods are frequently intended for use in the buying and selling of materials according to specifications and therefore should provide such precision that when the test is properly performed by a competent operator the results will be found satisfactory for judging the compliance of the material with the specification. TAPPI itself does not set specifications for expected Test Method results, but specifications from other societies or from individual companies may reference TAPPI Standard Test Methods as a means of determining properties outlined in the specification. TAPPI Test Methods cover the determination of fundamental properties of materials such as density, viscosity, moisture, brightness, etc. They may include a variety of different laboratory procedures such as chemical and spectrochemical analyses, mechanical and electrical tests, weathering tests, visual examination, fire tests, performance characteristics, sampling, nondestructive tests, radiation exposure tests, etc.

7.1.7 Statements addressing precision are required in TAPPI Test Methods. This gives the user of the Test Method the nature of the sample to be prepared and analyzed and information regarding the nature of the data obtained by using the Test Method. The requirement of precision statements does not mean that numerical statements must be generated. It means that the spread of resulting data and its relationship to an accepted reference material or source (if available) shall be addressed. Some Test Methods have no numerical expression of precision (for example, pass/fail tests, spot tests, etc.). In these cases, precision shall be addressed and the reasons for not including quantitative data explained. Test Methods are sometimes prepared for use in research rather than in the buying and selling of materials. Other Test Methods cover process control, screening, and field tests. Although these latter Test Methods may not always be as precise as referee Test Methods, they are

sufficiently precise for the intended use and usually require less time. Field tests allow testing at the site, thus eliminating transportation of specimens to and from the laboratory.

7.2 Terminology

7.2.1 *Language.*

7.2.1.1 Write the Test Method in plain, simple language. Do not use jargon, ambiguous statements, or undefined abbreviations. Consult a standard unabridged dictionary, e.g., *Webster's Third New International Dictionary* or the *Oxford English Dictionary*, for general terms or *The Dictionary of Paper*, latest edition, for papermaking terms.

7.2.1.2 Use the present tense throughout and the voice and mood specified below:

	Voice	*Mood*
Introduction, scope, summary, significance, interferences, precision, additional information	Active [Example: "The purpose of this Standard is to determine (some property)...."]	Indicative
Sampling, test specimens, test units, conditioning, procedure, calculations, report, calibration, preparation, maintenance, safety precautions	Active [example: "Weigh a sample," not "A sample shall be weighed."]	Imperative
Applicable methods, definitions, apparatus, reagents and materials, keywords, literature cited, references	Use descriptive form	
Appendixes	Same as parallel section of main body	

7.2.1.3 Where descriptive paragraphs are necessary, use the indicative mood for mandatory provisions (e.g., is required to have, must have ...) and the subjunctive mood (e.g., should have, should be...) for optional provisions.

7.2.2 *Units*

7.2.2.1 The International System of Units (SI) is the preferred system of measurement for use in TAPPI Standards. Use SI units or other units recommended in T 1210 and TIP 0800-01 "Units of Measurement and Conversion Factors" in all Standards as the primary means of expressing quantities, dimensions, tolerances, and results. English units or commonly used units (such as Gurley stiffness units) may be given immediately following in parentheses. Exceptions to this requirement are permitted in cases where Standards were originally developed using the English system of measurement units, or where the majority of instruments in current use are designed to English unit specifications, or for which there is such a considerable body of existing measurement data within the industry that conversion to SI units for reporting results would cause considerable

confusion, or for any combination of the above. The responsible SSIG must develop the rationale to support the use of this exception.

7.2.2.2 When SI units are used alone, for example, in chemical methods, or are considered to be sufficient by the responsible SSIG, omit the U.S. customary equivalents.

7.2.2.3 Within each paragraph, do not repeat equivalent SI or U.S. customary units, once given.

7.2.2.4 Round non-critical equivalent values to convenient reasonable numbers and insert the word "nominal," "approximately," or "about" before the equivalent value in the parentheses.

7.2.3 *Abbreviations*

7.2.3.1 Use standard abbreviations, as given in ANSI/ASME Y1.1-1972 (R 1984) "Abbreviations for Use on Drawings and in Text," but only for space limitations in tables and figures. In general, do not abbreviate in text, except for "Fig., No., Eq., Ref." or others allowed by TAPPI publication style.

7.2.3.2 Use abbreviations in the singular only, except for "Figs., Nos., Eqs., Refs."

7.2.4 *Notes*

7.2.4.1 Notes in the text are informative and are not properly part of the Standard. Substantive information must not be placed in a note. They are to be used sparingly. Place them at the end of the paragraph to which they pertain, not at the end of the section. If it is especially desirable to refer to a note in connection with an item in the middle of a paragraph, insert after that word or phrase "(NOTE...)." If possible, however, it is better to end the paragraph at the point where a note is required. Otherwise the reader is compelled to look ahead to read the note, then return to the text.

7.2.4.2 Number notes in sequence regardless of the number of the section or paragraph.

7.2.4.3 Number notes in appendixes by A.1, A.2,...

7.3 Format

7.3.1 *Drafts*

7.3.1.1 Drafts of newly proposed Standards should be preferably submitted electronically, but they may be typed on white bond paper.

7.3.1.2 Double space all copy (including notes, tables, and references) and leave a margin of at least 25 mm all around. Number the pages consecutively.

7.3.1.3 If the Standard needs illustrations, include original artwork and black and white glossy photographs or black drawings. If necessary, contact the TAPPI Standards Administrator for assistance.

7.3.1.4 Drafts for review of existing Standards are prepared by TAPPI staff and distributed at the time of balloting. Standard-Specific Interest Groups who wish to make changes before a review draft is balloted should notify the Standards Administrator so the changes can be incorporated. Working Group Chairmen should submit changes by clearly marking a copy of the Standard.

7.3.1.5 Working Group Chairmen should not retype Standards that have already been prepared in ballot form by TAPPI, because the drafts are entered in the TAPPI computer system, and typographical errors could be made when retyping. Changes should be marked on a copy of the draft and submitted to the Standards Administrator. For each new draft balloted, sections that have been changed since the last draft will be highlighted so that voters can easily identify changes.

7.3.2 *Sections*

7.3.2.1 Divide the text into sections, numbered consecutively as 1., 2., etc., except for Appendixes (A.1, A.2), Literature Cited (see 7.4.20), and References (see 7.4.21), with the subject heading of each section flush left and in boldface.

7.3.2.2 Write the sections in the following order, omitting inapplicable sections and adding appropriate ones where needed. The order of the sections may be changed if the procedure does not naturally fit the order prescribed. The headings identified in this section as "mandatory" are required for Test Methods. Standard Practices follow the same general format, although many of the non-mandatory sections listed below are usually appropriate for Test Methods but not for Standard Practices (e.g., Apparatus, Reagents and Materials, Sampling, etc.). Other headings shall be included when the subject matter is pertinent to the Standard in question, in which case, all instructions and guidance for that particular section shall be followed. For example, if the Standard does not contain reference to any other literature within the text, it is not required to include a "Literature Cited" section. If, however, specific safety precautions are cited throughout the text, then the section on "Safety Precautions" shall be followed.

Title (mandatory)
Introduction
Scope (mandatory)
Summary
Significance (mandatory)
Applicable Standards
Definitions
Interferences
Apparatus
    Preparation (may be a separate section or included under Apparatus)
    Calibration (may be a separate section or included under Apparatus; extended calibration or maintenance procedures are best placed in an Appendix)
    Maintenance (may be a separate section or included under Apparatus)
Reagents and materials
Safety precautions (mandatory when applicable)
Sampling, Test Specimens and Test Units (may be combined in one or included as separate sections)
Conditioning
Procedure (mandatory)
Calculations (or Interpretations of the Observations) (mandatory for quantitative methods)
Report (mandatory for Test Methods, optional for Standard Practices)
Precision (mandatory for Test Methods only)
Keywords (mandatory)
Additional information (mandatory: must include Effective Date of Issue)
Literature cited
References
Appendixes

Not all of these headings may be required for a particular Test Method or Standard Practice. Additional headings which are included to cover specialized subjects should appear in the most appropriate place, depending on their relation to the sections listed above.

7.3.2.3 The major difference between a Test Method and a Standard Practice is the absence of sections titled Calculations, Report, and Precision in the Practice. On the other hand, a Practice *may* contain a Report section which states, "Report that (place here the activity covered by the practice -- calibration, separation, selection, etc.) was carried out as described in TAPPI Standard Practice T XXX sp-xx . . "

7.3.2.4 A description of the contents appropriate to each of the above headings is given in Section 7.4.

7.3.2.5 Divide each section of the text into paragraphs and subparagraphs as appropriate.

7.3.2.6 Number paragraphs and subparagraphs in accordance with the Modified Decimal Numbering System, illustrated by the numbering of sections, paragraphs, and subparagraphs of these guidelines. Assign to each paragraph of a section a two-part number consisting of the section number followed by a decimal point and the paragraph number. For example, designate the paragraphs of Section 5 as: 5.1, 5.2, etc. Designate subparagraphs as: 5.3.1, 5.3.2, etc. Designate a fourth subdivision as 5.3.3.1. Division beyond this is prohibited. Do not divide any section into subsections if only one subsection is the result of such division.

7.4 Contents of sections

7.4.1 *Title* (mandatory). The title should be concise but complete enough to identify the nature of the test, the material to which it is applicable, and to distinguish it from other similar titles. Titles of analogous Test Methods should be identical, except for the distinctive feature(s) of each Test Method. Titles are used frequently in lists, tables of contents, indexes, tabulating card systems, etc., and therefore should be brief but inclusive. Select words that lend themselves to indexing. The essential features of a title are the particular property or constituent being determined, the material to which the Test Method is applicable, and, when pertinent, the technique or instrumentation. Specific instrument names are generally not included in the title, except in cases where the instrument name is needed to differentiate the Test Method from another TAPPI Test Method purported to measure the same property (see 7.4.9.5).

7.4.2. *Introduction*. A separate section covering general introductory or informational material is not required, but occasionally a Test Method is of such a nature that it requires an explanatory statement for proper understanding by the user.

7.4.3 *Scope (mandatory)*

7.4.3.1 Include here the purpose and application of the Test Method. State the recommended range of application as completely as possible, as to types of materials and to limiting values of the properties or constituents. Avoid repetition of information included in the “Significance’ section.

7.4.3.2 Describe in a separate paragraph specific limitations of the Test Method. Means of recognizing when it may not be applicable to particular materials or conditions should be stated.

7.4.3.3 Relate the Test Method to other TAPPI Test Methods intended for measuring the same or similar properties, and comment on the applicability of each.

7.4.4 *Summary*

7.4.4.1 Outline briefly the essential features of the Test Method in sufficient detail for general understanding. Include a brief statement of the principles involved; e.g., for chemical methods, state the type of procedure, as colorimetric, electrometric, volumetric, etc., major reactions, etc.

7.4.5 *Significance (mandatory)*

7.4.5.1 Provide in this section information on the importance of the Test Method, avoiding repetition of information included in the "Scope." State first the most significant features in a concise manner without sacrificing important ideas or completeness in order to provide the user an understanding of: (a) the meaning of the test as related to the manufacture and end use of the material; (b) the suitability of the test for specification acceptance, design purposes, service evaluation, regulatory statutes, manufacturing control, development, and research; (c) the fundamental assumptions inherent in the method that may affect the usefulness of the results. Include any warning needed in the interpretation of the results of the test.

7.4.6 Applicable Standards or Other Documents

7.4.6.1 List the title of any Standards, including other TAPPI Standards or Standards from other societies, which may be useful or necessary (or are referenced) in the understanding of the Test Method. Do not include the year of designation on a referenced Standard unless there is a technical reason for requiring a particular revision as a reference.

7.4.7 *Definitions*

7.4.7.1 Include only definitions or descriptions of terms which are required for the correct interpretation of the Test Method. Include definitions that are not given in standard dictionaries.

7.4.7.2 State definitions in short form which does not repeat the term being defined, e.g., Sample: a specified number of test units selected according to a prescribed procedure to represent the lot.

7.4.8 *Interferences*

7.4.8.1 If the successful application of the Test Method requires the inclusion of explanatory statements on interference effects, include such information here; otherwise, omit this section. List briefly the constituents or properties that are likely to cause interference and the amounts that are known to interfere. In some cases this information is obtainable only by observation during the performance of the test. If the presence of an interfering factor affects the precision of the test results and compensations are made in the calculations, this should be explained in this section and noted in the appropriate section. In some cases, interferences may be a major factor in judging test results and explanations of their effects may become lengthy; lengthy explanations may be placed in an appendix.

7.4.9 *Apparatus*

7.4.9.1 List and describe the essential features of any special apparatus required for the Test Method. Add an illustration if needed to make the description clear.

7.4.9.2 Give the description of each piece of apparatus in one or more separate paragraphs, using the name of the apparatus described as a subheading in italics (underlined in typewritten manuscripts). If lengthy (requiring more than one typed page) place a detailed description of the apparatus in the appendix. Retain in the

text only a brief description and an illustration, if necessary. Include sufficient description in the Test Method so as to give the reader an adequate explanation of each essential part.

7.4.9.3 Give tolerances for all critical dimensions, weights, and other specifications. Tolerances shall be expressed in either absolute value or as a percentage of the quantity or dimension. Only one set of tolerances should be included; that set of tolerances should be in the primary units used for dimensions in the Test Method (as determined by the WGC and the vote of the SSIG; see 7.2.2.1).

7.4.9.4 Reference a footnote on the first appropriate item under "Apparatus" which refers the user to the TAPPI Suppliers List (see 5.3.6). The text of the footnote shall read: "Names of suppliers of testing equipment and materials for this Test Method may be found on the Test Equipment Suppliers List in the full set of TAPPI Test Methods, or may be available from the TAPPI Standards Administrator."

7.4.9.5 Avoid the use of trade names unless the instrument name is needed to differentiate the Test Method from another TAPPI Test Method purported to measure the same property. Use generic descriptions of equipment and materials which are sufficiently complete to allow the user of the equipment to locate the needed item using readily available supplier catalogs and buyer's guides. In these descriptions state the required properties of the material or apparatus in performance or characteristic based terms, rather than trade names or trademarks. [For example, "...chemically and thermally resistant borosilicate glass..." rather than Kimax™ or Pyrex™.]

7.4.9.6 In cases where a WGC and/or SSIG find that materials or apparatus from a specific source are required for satisfactory performance of a procedure, or has found only a single material or material source that is suitable for the procedure, this fact should be indicated in the Test Method. In cases where this is done, however, the phrase "...other materials or equipment complying with the description of (item required) may work equally well..." or similar should be placed immediately following the material description. For example, "...extraction apparatus constructed of... a Soxhlet™ extraction assembly complies with the description in this section, and was used to obtain the precision data stated in this Test Method. Other equipment complying with the description of extraction apparatus in this section should work equally well."

7.4.9.7 Note any reference materials that may be required for the test. These are materials, chemicals, or equipment distributed by organizations whose competence and performance in the control and maintenance of these reference materials are recognized. For reference materials that are proprietary to TAPPI and are available only from TAPPI, simply refer to these materials in the Test Method and note that they are available from TAPPI. For materials that are available from other sources, do not list the organizations in the Test Method; instead, refer the user to the TAPPI Reference Materials List and notify the TAPPI Standards Administrator as to which suppliers of reference materials exist and request that these suppliers be contacted and informed of what they must do to be added to the list, in accordance with any existing Standard Practices that describe the requirements for suppliers to be recognized as suppliers of reference materials.

7.4.9.8 In all cases where materials or equipment are required to perform a Test Method, and in cases where reference materials are required to perform a Test Method, it is the responsibility of the WGC to be certain that all suitable sources have been added to the Suppliers List and/or the Reference Materials List by notifying the Standards Administrator.

7.4.9.9 Separate sections called "Calibration," "Preparation," and "Maintenance" should be included which feature directions for calibration, preparation, and maintenance of the apparatus described in this section, unless these are used frequently and constitute a normal sequence of the procedure, in which case place these directions in the "Procedure."

7.4.9.10 List together in a final paragraph with the subheading "Other Equipment" all the commonly used glassware, with sizes, and apparatus required and not previously described. This list, together with the other items, will serve as a checklist for the prospective user.

7.4.9.11 **In no case may materials or apparatus be cited in a Test Method in a manner that appears exclusionary or inconsistent with the TAPPI Antitrust Policy.**

7.4.10 *Reagents and materials*

7.4.10.1 As with "Apparatus," list alphabetically reagents, solutions, color standards, etc., required for the Test Method, under the appropriate heading. Enter the name of each item in italics (underlined in typewritten manuscripts) as a subheading. Give the chemical formulas of the reagents and, if necessary, provide directions for their preparation. If the directions are lengthy, place them in the appendix. Include the desired concentration of reagents, if significant, followed by instructions for preparation and standardization (if required), using the imperative mood and concise descriptions. Spell out the names of chemicals and follow with the chemical formula; subsequent references may be to the formula where they can be clearly and efficiently specified in this manner. Exception: always spell out the word "water" and the names of substances in their elemental state (for example, use "lead" rather than "Pb" or "oxygen" rather than "O_2"). If the reagent is to be used as purchased and not diluted, dissolved, or purified, state the chemical formula as given by the manufacturer.

7.4.10.2 List all reference materials which would fit into the category of reagents and materials (as opposed to apparatus). These are reagents distributed by organizations whose competence and performance in the control and maintenance of these reference materials are generally recognized. Do not list the organizations in the Test Method, however; instead refer the user to the TAPPI Reference Materials List and notify the Standards Administrator as to which suppliers of reference materials exist so they can be added to the list.

7.4.10.3 Under a final subheading "Other Materials," add a list of generally available materials. This paragraph should include: the common reagents, such as dilute acids, bases, and solutions (other than standardized solutions); usual reagents which can be briefly and sufficiently described, such as "dilute sulfuric acid (1 part concentrated H_2SO_4 in 99 parts water)"; and common indicators. The expression "5% solution (w/v)" means 5 g of anhydrous materials dissolved in water and diluted to 100 mL. If required, specify concentrated acids or bases by their specific gravity or percentage by weight.

7.4.10.4 The use of analytical reagent grade chemicals and distilled water is assumed in all TAPPI Test Methods unless otherwise specified, or where there is clearly no need for this degree of purity.

7.4.10.5 Use generic descriptions of chemicals and reagents which are sufficiently complete to allow the user of the equipment to locate the needed item using readily available supplier catalogs and buyer's guides. In these descriptions state the required properties of the material or apparatus in performance or characteristic based terms, rather than trade names or trademarks. [For example, "...petrolatum or petroleum jelly..." rather than Vaseline™.]

7.4.10.6 In cases where a WGC or SSIG finds that a chemical or reagent from a specific source is required for satisfactory performance of a procedure, or is aware of only a single chemical or reagent that permits the procedure to be performed, this fact should be indicated in the Test Method. In cases where this is done, however, the phrase "...other chemicals or reagents complying with the description of (item required) may work equally well..." should be placed immediately following the chemical or reagent description. (For example, "...*indicator solution*, a 0.5% (w/v) of [state the exact chemical name here] in distilled water. Keystone RediPuR™ [chemical name] was used for the studies reported in the precision section and found satisfactory. Other sources of [chemical name] may be available and may work equally well.")

7.4.10.7 In all cases where general or specific equipment is required for an analysis, it is the responsibility of the WGC to notify the Standards Administrator that suitable sources(s) should be added to the Suppliers List.

7.4.10.8 **In no cases may chemicals or reagents be cited in a Test Method in a manner that appears exclusionary or inconsistent with TAPPI's Antitrust Policy.**

7.4.11 *Safety* precautions (mandatory when applicable; the requirements of 7.4.11.2 are mandatory for all Test Methods)

7.4.11.1 If there is a hazard in performing the test such as explosion, fire, toxicity, include a warning of the dangerous step here. Repeat the warning in the text at the appropriate point and include the word "CAUTION." Note safety equipment required and refer user to MSDS sheets when applicable. Avoid specific statements for protective devices or chemical disposal that may be subject to change due to regulations or current safety practices.

7.4.11.2. The accepted TAPPI Caution Statement shall appear in a box on page 1 of the Test Method. The statement is:

> This Test Method may include safety precautions which are believed to be appropriate at the time of publication of the method. The intent of these is to alert the user of the method to safety issues related to such use. The user is responsible for determining that the safety precautions are complete and are appropriate to their use of the method, and for ensuring that suitable safety practices have not changed since publication of the method. This method may require the use, disposal, or both, of chemicals which may present serious health hazards to humans. Procedures for the handling of such substances are set forth on Material Safety Data Sheets which must be developed by all manufacturers and importers of potentially hazardous chemicals and maintained by all distributors of potentially hazardous chemicals. Prior to the use of this method, the user must determine whether any of the chemicals to be used or disposed of are potentially hazardous and, if so, must follow strictly the procedures specified by both the manufacturer, as well as local, state, and federal authorities for safe use and disposal of these chemicals.

7.4.12 *Sampling, Test Specimens, and Test* Units (may be combined into one section or included as separate sections)

7.4.12.1 List instructions for taking the sample from the lot or shipment. This will usually be a reference to TAPPI T 400 "Sampling and Accepting a Single Lot of Paper, Paperboard, Containerboard, or Related Product," T 657 "Sampling of Fillers and Pigments," T 257 "Sampling and Preparing Wood for Analysis," T 605 "Reducing a Gross Sample of Granular or Aggregate Material to Testing Size," or T 210 "Weighing, Sampling and Testing Pulp for Moisture." State also any special precautions in handling or storing the sample in order to preserve its properties, and any special treatment or preparation of the sample required before specimens may be taken from it. For chemical tests and where a special problem for other tests exists, list the amount of material to be taken for each test unit.

7.4.12.2 Do not use the word "representative" as applied to the sample, because it is seldom possible to obtain a sample which is representative of the lot in the statistical sense of having been selected "at random." The best that can be said is that a sample is one or more portions of a lot, i.e., test units selected according to a prescribed procedure.

7.4.12.3 For a small lot, one test unit may be sufficient. For a large lot, an adequate sampling may require several test units (see TAPPI T 400 “Sampling a Single Lot of Paper, Paperboard, Linerboard, or Related Material”). If in the latter case only a lot average will be required, include instructions for combining the several test units into a single composite sample (composite test unit) from which the test specimens will be drawn.

7.4.12.4 A test unit is an area of paper or amount of material sufficient to obtain a single set of test results for all the properties to be measured.

7.4.12.5 A “test result” refers to the value obtained for a given property from one test unit. Specify the amount of material required to obtain a test result in accordance with that Test Method, the test being as specified in the Test Method, a single test determination or the average or other specified combination of test determinations on a specified number of test specimens.

7.4.12.6 A “test specimen” is a test unit or portion of a test unit upon which a single or multiple observation is to be made. If more than one test specimen is required per test unit, use the plural title for this section. Follow the general form: “From each test unit of the sample, select (take, cut, weigh, prepare) test specimens *in each principal direction*.” Omit the italicized words if not applicable. In the blank insert the required number of test specimens. Prepare sufficient specimens to perform the number of tests required for the procedure.

NOTE 1: The term “test specimen” as used in the United States is equivalent in ISO/TC6 Standards to the term “test piece.”

7.4.12.7 If it is not possible to select the test specimens “at random” from a sample, or in some other manner to assure statistical representativeness, specify how the specimens are to be taken from a test unit.

7.4.12.8 If the sample is to be conditioned prior to cutting the test specimens, state this in the beginning of this section (see 3.4.10). Also state if conditioning is not required.

7.4.12.9 A practice may be written to cover a common operation prior to performing various specific testing procedures, where the absence of that practice would require incorporation of the sample preparation procedure in multiple Test Methods. TAPPI T 205 "Forming Handsheets for Physical Tests of Pulp" is an example of a practice required prior to doing various types of testing.

7.4.13 *Conditioning*

7.4.13.1 When the standard atmospheres are required for preconditioning, conditioning, and testing, insert here: Precondition, condition, and test the specimens in atmospheres in accordance with TAPPI 402 “Standard Conditioning and Testing Atmospheres for Paper, Board, Pulp Handsheets and Related Products.”

7.4.13.2 For physical tests especially sensitive to humidity history, emphasize the need for preconditioning, by adding after the word “preconditioning” the phrase “on the dry side” in parentheses.

7.4.13.3 If standard atmospheres are not used for preconditioning, conditioning, and testing, state in this section the atmosphere(s) to be used, the time of exposure to the atmosphere, as well as the atmosphere required during the test, where necessary. State whether the conditioning requirements apply to laboratory samples as well as individual specimens. References may be made to other TAPPI Standards or standards from other societies for this purpose. As a specific example, when Test Methods for nonwovens are developed, reference may be made to ASTM D 1776 “Standard Practice for Conditioning Textiles for Testing.”

7.4.14 *Procedure* (mandatory)

7.4.14.1 Describe in proper sequence the procedure to be followed in such detail that it can be performed by a trained technician who may be unfamiliar with the test. Subheadings may be used if they will help the organization of the material.

7.4.14.2 State any precautions that should be observed.

7.4.14.3 Indicate the number of significant figures required in weighing and other operations, as well as in reading and recording the observations.

7.4.14.4 State the number of specimens to be tested from each test unit. When more than one observation is to be made on each specimen, state the number of replicate observations per specimen. Be specific. Avoid use of the words “at least,” as this causes uncertainty in interpreting the precision statement. However, when appropriate, add: “If any values appear to be outliers, see TAPPI 1205 'Dealing with Suspect (Outlying) Test Determinations' and use one or more of the extra test specimens specified in the section on test specimens to replace outliers.”

NOTE 2: As described in 7.2.4, use a note to describe supplementary information regarding the procedure, such as technical details or discussion to amplify the test procedure, or alternative direction. Instructions or details essential to the procedure shall not appear in notes.

7.4.15 *Calculations (or Interpretations of the Observations* (mandatory for quantitative Test Methods)

7.4.15.1 Give directions for calculating the test result, i.e., value for the test unit, from the observations on the specimens of the test unit. Give all mathematical formulas necessary, using letter symbols in the equation. Include a brief description of the derivation of any calculation factor needed to calculate the final value(s). Define the symbols in a list following the equations, listing the symbol first, followed by an equals sign, followed by a description of the symbol, followed by a comma, followed by the units to be used. For example:

$$F = C/(A - B)$$

where

F = zinc equivalent of ferrocyanide solution, g/mL
A = solution required to titrate the zinc solution, mL
B = solution required to titrate the blank, mL
C = zinc used, g

7.4.15.2 For Test Methods whose results are obtained directly from a measurement, then include a statement that no calculations are necessary.

7.4.15.3 In qualitative Test Methods or in Test Methods where the results are in descriptive form, relative terms, or abstract values, this section may be titled “Interpretations of the Observations.”

7.4.16 *Report* (mandatory for Test Methods, optional for Standard Practices)

7.4.16.1 If reporting of qualitative or quantitative data is required, generally a Test Method rather than a Standard Practice should be written. TAPPI T 205 "Forming Handsheets for Physical Tests of Pulp" is an

example of a practice having no Report section. TAPPI T 400 "Sampling and Accepting a Single Lot of Paper, Paperboard, Containerboard or Related Product" is an example of a practice having a Report section stating, in general terms, how the practice (in this case, sampling) was conducted.

7.4.16.2 State the form of reporting the test result for each test unit, including the number of significant figures and the units in which the result is to be expressed.

7.4.16.3 Require that for each test unit, the standard deviation (or the maximum and minimum) of the acceptable replicate test determinations and the values of any rejected test determinations be reported. Require that the reasons for rejecting test determinations, e.g., on basis of outlier test, TAPPI T 1205 “Dealing With Suspect (Outlying) Test Determinations,” be stated.

7.4.16.4 When results are to be reported as a percentage of the specimen weight, state that this is the conditioned weight unless there is a theoretical or practical reasons why some other weight, e.g., “as is” or “oven-dried” weight, is used.

7.4.16.5 Require that any deviations from any section of the Test Method be stated in this report.

7.4.16.6 A practice may incorporate two or more different instruments, either of which can be used, or two or more different conditions (temperature, speed, time, etc.) at which a practice may be conducted, in which case the practice may direct that the specific condition used be reported in the Report section. For example, "The test specimens were prepared using TAPPI Standard Practice T XXX, Instrument A, Speed B, . . ."

7.4.17 *Precision* (mandatory)

7.4.17.1 State precision, degree of agreement expected between test results, in terms of repeatability and reproducibility as defined in TAPPI T 1200 “Interlaboratory Evaluation of Standards to Determine TAPPI Repeatability and Reproducibility.” It is essential to indicate the number of test determinations per test result for which the precision statement was calculated. [See paragraph 9.3.1 for details on Working Group Chairman's responsibilities regarding the development of the precision statement in collaboration with Collaborative Testing Services.]

7.4.17.2 For quantitative TAPPI Test Methods use the form:

> “For the maximum expected difference between two test results, each of which is the average of (number) test determinations:
>
> Repeatability (within a laboratory) = _____
>
> Reproducibility (between laboratories) = _____
>
> in accordance with the definitions of these terms in TAPPI T 1200 'Interlaboratory Evaluation of Standards to Determine TAPPI Repeatability and Reproducibility.'”

If repeatability or reproducibility is different for different ranges of results or types of specimens, note this in the precision section.

7.4.17.3 Include identification of the source of precision information, such as: These values are based on an interlaboratory study (Reference ...) conducted in accordance with TAPPI T 1200 “Interlaboratory Evaluation of Standards to Determine TAPPI Repeatability and Reproducibility,” using (type of paper) only. Give specific references to published data or to TAPPI archives where raw data and analysis may be filed. Provide information on number, range and types of materials, the number of laboratories, and number of test results or test determinations per material per laboratory. See T 1200 for further information concerning the preparation of the precision statement from available data.

7.4.17.4 Where reproducibility data from a public sector testing program (such as Collaborative Testing Services) is used, the following statement shall be included in the precision statement of the Test Method:

> The user of these precision data is advised that it is based on actual mill testing, laboratory testing, or both. There is no knowledge of the exact degree to which personnel skills or equipment were optimized during its generation. The precision quoted provides an estimate of typical variation in test results which may be encountered when this Test Method is routinely used by two or more parties.

7.4.17.5 Both Official Test Methods and Provisional Test Methods are required to carry a statement of repeatability. A statement of reproducibility is mandatory for Official Test Method. Quantitative Official Test Methods may be issued without information on comparability as defined in T 1200. Insert the words "not known" in place of missing reproducibility values in Provisional Test Methods. Omit any reference to comparability in the absence of the appropriate data.

7.4.17.6 For TAPPI Test Methods having characteristics such that repeatability and/or reproducibility cannot practicably be determined, a statement to that effect, with reasons, may replace the form of precision statement specified in 7.4.17.2.

7.4.17.7 For qualitative Test Methods or Test Methods where the results are in descriptive form, a precision statement is inapplicable; the precision section must still be included with a statement explaining the inapplicability of a true precision statement. Possible causes of false results may be summarized in the section "Interferences."

7.4.17.8 All precision data and calculations not included in a published Test Method must be submitted by the WGC to the Standards Administrator for archiving at TAPPI.

7.4.18 *Keywords* (mandatory)

7.4.18.1 List appropriate terms for indexing, selected from both the title and body of the Test Method and including general, vernacular, and trade terms. These terms are the basis for preparing index terms.

7.4.18.2 To assure consistency in selecting keywords for indexing purposes and in selecting the proper form of a keyword, use the Thesaurus of Pulp and Paper Terminology, formerly published by the Institute of Paper Science and Technology, and currently published by Elsevier. Terms that appear in this thesaurus are preferred keywords and shall be used in the majority of cases. However, the Q&SMC shall maintain a supplemental keyword list which shall be included as an Appendix in the guidelines for TAPPI Standards. Included on this list will be terms that the Q&SMC has chosen as part of the supplement to the Thesaurus.

7.4.18.3 The Working Group Chairman should select keywords, but these keywords must be reviewed by the Standards Administrator for their acceptability in accordance with the Thesaurus and the supplemental list. If the Working Group Chairman and/or the Standards Administrator determine that, for ease of use or clarity, additional terms need to be included in a particular Test Method, then these terms shall be approved by the Q&SMC. When a majority of the members of the Q&SMC approve the inclusion of a new keyword, the new keyword shall be added to the supplemental list and to the Test Method for which it was proposed.

7.4.19 *Additional information* (mandatory)

7.4.19.1 The first paragraph should state, "Effective date of issue: (to be assigned)." TAPPI Staff will insert the effective date of issue upon publication, which is the date on which final SARG approval has been achieved.

7.4.19.2 If the Test Method is a revision, describe briefly the *significant* changes made in the Test Method. In addition, state the extent to which the changes made affect the average level, repeatability and reproducibility of test results with respect to both different materials and conditions, so that the effects of such changes in test results can be compensated for in specifications and/or in other uses to which test results are put. In the case of revised Test Methods which have had prior revision, the information regarding changes in the Test Method which affect the test results, *especially those which affect the average test level*, shall include not only the effects of current changes but also the effects of changes made in the immediately preceding revision with the effect dates of such changes.

7.4.19.3 Give any information that may be generally helpful but not particularly appropriate elsewhere in the text, i.e., errors that might result if undersized or too few specimens must be used because of sample limitations.

7.4.19.4 If appropriate, describe how to obtain approximate test results from equipment which may be available but which does not meet the requirements of the Test Method, indicating how the reliability of the results may be affected.

7.4.19.5 For Provisional Test Methods, include a paragraph explaining the reason the method is Provisional (for example, a new Test Method without reproducibility data, a Test Method reclassified due to application of new technology, etc.).

7.4.19.6 For Classical Test Methods, include a paragraph noting the reclassification of the method as Classical and include appropriate wording to describe the Classical Method status. For example, "T xxx cm-xx, formerly T xxx om (or pm)-xx, has been (was) reclassified as a Classical Method (in YEAR). Such procedures are no longer in common use, or have been superseded by advanced technology. These testing procedures are technically sound, have a history of use, and may contain a body of literature references that make their preservation valuable."

7.4.19.7 In a final paragraph, include a list of related methods. This section is to provide an index of test methods published by other societies for measuring the same property or characteristic. Where known, a distinction should be made between methods which are technically the same as the TAPPI Test Method and therefore can be expected to give numerically identical results and those which purportedly measure the same property but with a different procedure or apparatus. Specifically describe any differences from other published methods for measuring the same property. Cite available references describing the relationships. Include the number of the method, the exact title of the method, and the name and location of the sponsoring organization. TAPPI staff will send to the Working Group Chairmen copies of related methods for their use when the ballot tabulation is compiled.

7.4.19.8 It is the responsibility of the Working Group Chairman reviewing the Test Method to assure the related methods cited are current with respect to title and reference number. The WGC and the Standards Administrator shall work jointly on revision of the Additional Information section.

7.4.20 *Literature cited* (do not number this section heading)

7.4.20.1 In the text, in parentheses and italics (underscore on a typewriter), add the reference numbers of the literature citations consecutively, i.e., (*1*), (*2*), (*3*), etc.

7.4.20.2 List only literature cited in the text. These citations should be to journal articles, books, patents, or other publications that pertain to background information or supporting data on the Test Method. Number the citations in the order of their appearance in the text. Give authors and complete titles, source, etc.

7.4.20.3 Do not include restricted publications that are not generally accessible. Do not reference private communication unless records of such communication have been placed in the Test Method's file at TAPPI.

7.4.20.4 Citations must be complete and accurate. This is the responsibility of the Working Group Chairman.

7.4.21 *References* (do not number this section heading)

7.4.21.1 List under this heading any additional general references that may serve as background information or supporting data for the Test Method but that are not specifically cited in the text. Do not number the list. Do not include restricted publications that are not generally accessible. Do not reference private communication unless records of such communication have been placed in the Test Method's file at TAPPI.

7.4.21.2 It is the responsibility of the Working Group Chairman to make sure that references are complete and accurate.

7.4.22 *Appendixes*

7.4.22.1 Include here any lengthy detailed description of apparatus, instructions for calibrating or standardizing apparatus, operating instructions and adjustments for specific makes of apparatus to make them comply with the Test Method involved, development of equations or theory, charts or supplementary information for computations, or anything else too extensive for convenient inclusion in its logical place in the text.

7.4.22.2 Designate the Appendixes A.1., A.2. A.3, etc., and divide into sections and paragraphs as in the text.

7.4.23 Checklist. Appendix 4 shows a checklist relating to the proper format for drafts. Use this checklist during the development or review of a Test Method to make sure all requirements have been met. Include a completed checklist with the final draft prior to the SARG Review.

7.5 Additional information

7.5.1 Related publications: American Society for Testing and Materials (ASTM), “Form and Style for ASTM Standards,” 7th ed. (1986), 13-0000001-86, ASTM; Canadian Pulp and Paper Association, “Preparation and Adoption of Standard Test Methods,” Z.1, CPPA; International Organization for Standardization, “ISO Directives, Part 3: Drafting and Presentation of International Standards,” second edition, 1989.

8. Format and Style of TAPPI Standard Specifications, Glossaries, and Guidelines (see Section 7 for Test Methods and Standard Practices)

The recommended format and general style of TAPPI Standard Specifications, Glossaries, and Guidelines are described in this section. It is intended to establish and maintain uniformity among TAPPI Standard Specifications, Glossaries, and Guidelines and is to be used in writing new or revising existing Standards. A TAPPI Standard should represent a consensus as to the best document for the intended use. It should be supported by experience and adequate data obtained from available sources.

8.1 Terminology

8.1.1 *Language*.

Write the Standard in plain, simple language. Use the present tense throughout and the active voice. Do not use jargon, ambiguous statements, or undefined abbreviations. Consult a standard unabridged dictionary, e.g., *Webster's Third New International Dictionary* or the *Oxford English Dictionary* for general terms or *The Dictionary of Paper*, latest edition, for papermaking terms.

8.1.2 *Units*

The International System of Units (SI) is the preferred system of measurement for use in TAPPI Standards. Use SI units or other units recommended in T 1210 and TIP 0800-01 "Units of Measurement and Conversion Factors" in all Standards as the primary means of expressing quantities, dimensions, tolerances, and results. Immediately follow the SI units with English units or commonly used units (such as Gurley stiffness units) in parentheses. In cases where Standards were originally developed using the English system of measurement units, or where the majority of instruments in current use are designed to English unit specifications, or for which there is such a considerable body of existing measurement data within the industry that conversion to SI units for reporting results would cause considerable confusion, use English units. Round non-critical equivalent values to convenient reasonable numbers and insert the word "nominal," "approximately," or "about" before the equivalent value in the parentheses.

8.1.3 *Abbreviations*

In general, do not abbreviate in text, except for "Fig., No., Eq., Ref." or others allowed by TAPPI publication style.

8.1.4 *Notes*

The use of informative notes is permitted but they should be used sparingly.

8.2 Format

8.2.1 Write the sections in the following order, omitting inapplicable sections and adding appropriate ones where needed. The order of the sections may be changed if the documentation does not naturally fit the order prescribed.

Title (mandatory)
Scope (mandatory)
Safety precautions (mandatory)

Content (mandatory) or other appropriate section heading that comprises the body of the work; among the possible headings for the Content that might be acceptable, depending on the nature of the Standards, include, but are not limited to:

Definitions
Materials
Procedure
Specifications
Guidelines
Calculations (or Interpretations of the Observations)

Statement of Accuracy
Keywords (mandatory)
Additional information (mandatory: must include Effective Date of Issue)
Literature cited
References
Appendixes

8.2.2 Additional headings which are included to cover specialized subjects should appear in the most appropriate place, depending on their relation to the sections listed above.

8.2.3 Divide each section of the text into paragraphs and subparagraphs as appropriate.

8.2.4 Number paragraphs and subparagraphs in accordance with the Modified Decimal Numbering System, illustrated by the numbering of sections, paragraphs, and subparagraphs of these guidelines. Assign to each paragraph of a section a two-part number consisting of the section number followed by a decimal point and the paragraph number. For example, designate the paragraphs of Section 5 as: 5.1, 5.2, etc. Designate subparagraphs as: 5.3.1, 5.3.2, etc. Designate a fourth subdivision as 5.3.3.1. Division beyond this is prohibited. Do not divide any section into subsections if only one subsection is the result of such division.

8.3 Contents of sections

8.3.1 *Title* (mandatory)

The title should be concise but complete enough to identify the nature of the Standard, the material to which it is applicable, and to distinguish it from other similar titles. Titles are used frequently in lists, tables of contents, indexes, tabulating card systems, etc., and therefore should be brief but inclusive. Select words that lend themselves to indexing. The essential features of a title are the particular property or constituent being determined, the material to which the Standard is applicable, and, when pertinent, the technique or instrumentation.

8.3.2 *Scope* (mandatory)

Include here the value, purpose and application of the Standard. State the recommended range of application as completely as possible, as to types of materials and to limiting values of the properties or constituents.

8.3.3 *Safety precautions* (mandatory)

8.3.3.1 If there are no safety precautions, state so in the document.

8.3.3.2 If there is a hazard in applying the information in the Standard, such as explosion, fire, toxicity, etc., include a warning of the dangerous step here. Repeat the warning in the text at the appropriate point and include the word "CAUTION." Note safety equipment required and refer user to MSDS sheets when applicable.

8.3.3.3 The accepted TAPPI Chemical Caution Statement should appear in a box on page 1 of the Standard if the Standard contains the use of any chemical other than water. The statement is:

> This Standard may require the use, disposal, or both, of chemicals which may present serious health hazards to humans. Procedures for the handling of such substances are set forth on Material Safety Data Sheets which must be developed by all manufacturers and importers of potentially hazardous chemicals and maintained by all distributors of potentially hazardous chemicals. Prior to the use of this technical information paper, the user should determine whether any of the chemicals to be used or disposed of are potentially hazardous and, if so, should follow strictly the procedures specified by both the manufacturer, as well as local, state, and federal authorities for safe use and disposal of these chemicals.

8.3.4 *Content* (mandatory)

8.3.4.1 Use an appropriate heading for this section such as technical information, procedure, data, gloassary, definitions, guidelines, or method.

8.3.4.2 Describe in proper sequence the procedure to be followed, the technical information to be conveyed, the data, or the method. Subheadings may be used if they will help the organization of the material. Such subheadings may include, but are not limited to:

> *Definitions*
> Include only definitions or descriptions of terms which are required for the correct interpretation. Include definitions which are not given in standard dictionaries. State definitions in short form which does not repeat the term being defined, e.g., Sample: a specified number of test units selected according to a prescribed procedure to represent the lot.
>
> *Materials*
> List and describe the essential features of any special materials required for the Standard. Illustrations may be added if needed.
>
> *Procedure*
> Describe the sequence of steps that are necessary to properly conduct the procedure required by the Standard.
>
> *Specifications*
> Provide the details of the specifications.
>
> *Guidelines*
> Provide the details of the guidelines.
>
> *Calculations (or Interpretations of the Observations)*
> Give directions for calculating the result. Give all mathematical formulas necessary, using letter symbols in the equation. Include a brief description of the derivation of any calculation factor needed to calculate the final value(s). Define the symbols in a list following the equations, listing the symbol first, followed by an equals sign, followed by a description of the symbol, followed by a comma, followed by the units to be used. For example:

$$F = C/(A - B)$$

where

F = zinc equivalent of ferrocyanide solution, g/mL
A = solution required to titrate the zinc solution, mL
B = solution required to titrate the blank, mL
C = zinc used, g

Specify the basis used for the calculation. When practical, use an example to illustrate the calculation.

When results are obtained using a computer program, include the program steps or the formulas used in the spreadsheet to calculate the data.

When results are obtained directly from a measurement, include a statement that no calculations are necessary.

When results are in descriptive form, relative terms, or abstract values, this subsection may be titled "Interpretations of the Observations."

8.3.4.3 Indicate the number of significant figures required in weighing and other operations, as well as in reading and recording the observations.

8.3.5 *Apparatus*

8.3.5.1 List and describe the essential features of any special apparatus required for the Standard. Add an illustration if needed to make the description clear.

8.3.5.2 Give the description of each piece of apparatus in one or more separate paragraphs, using the name of the apparatus described as a subheading in italics (underlined in typewritten manuscripts). If lengthy (requiring more than one typed page) place a detailed description of the apparatus in the appendix. Retain in the text only a brief description and an illustration, if necessary. Include sufficient description in the Standard so as to give the reader an adequate explanation of each essential part.

8.3.5.3 Give tolerances for all critical dimensions, weights, and other specifications. Tolerances shall be expressed in either absolute value or as a percentage of the quantity or dimension. Only one set of tolerances should be included; that set of tolerances should be in the primary units used for dimensions in the Standard (as determined by the WGC and the vote of the SSIG; see 8.1.2).

8.3.5.4 Reference a footnote on the first appropriate item under "Apparatus" which refers the user to the TAPPI Suppliers List (see 5.3.6). The text of the footnote shall read: "Names of suppliers of testing equipment and materials for this Standard may be found on the Test Equipment Suppliers List in the full set of TAPPI Standards, or may be available from the TAPPI Standards Administrator."

8.3.5.5 Avoid the use of trade names unless the instrument name is needed to differentiate the Standard from another TAPPI Standard purported to measure the same property. Use generic descriptions of equipment and materials which are sufficiently complete to allow the user of the equipment to locate the needed item using readily available supplier catalogs and buyer's guides. In these descriptions state the required properties of the

material or apparatus in performance or characteristic based terms, rather than trade names or trademarks. [For example, "...chemically and thermally resistant borosilicate glass..." rather than Kimax™ or Pyrex™.]

8.3.5.6 In cases where a WGC and/or SSIG find that materials or apparatus from a specific source are required for satisfactory performance of a procedure, or has found only a single material or material source that is suitable for the procedure, this fact should be indicated in the Standard. In cases where this is done, however, the phrase "...other materials or equipment complying with the description of (item required) may work equally well..." or similar should be placed immediately following the material description. For example, "...extraction apparatus constructed of... a Soxhlet™ extraction assembly complies with the description in this section, and was used to obtain the precision data stated in this Standard. Other equipment complying with the description of extraction apparatus in this section should work equally well."

8.3.5.7 Note any reference materials that may be required for the test. These are materials, chemicals, or equipment distributed by organizations whose competence and performance in the control and maintenance of these reference materials are recognized. For reference materials that are proprietary to TAPPI and are available only from TAPPI, simply refer to these materials in the Standard and note that they are available from TAPPI. For materials that are available from other sources, do not list the organizations in the Standard; instead, refer the user to the TAPPI Reference Materials List and notify the TAPPI Standards Administrator as to which suppliers of reference materials exist and request that these suppliers be contacted and informed of what they must do to be added to the list, in accordance with any existing Standard Practices that describe the requirements for suppliers to be recognized as suppliers of reference materials.

8.3.5.8 In all cases where materials or equipment are required to perform a Standard, and in cases where reference materials are required to perform a Standard, it is the responsibility of the WGC to be certain that all suitable sources have been added to the Suppliers List and/or the Reference Materials List by notifying the Standards Administrator.

8.3.5.9 Separate sections called "Calibration," "Preparation," and "Maintenance" should be included which feature directions for calibration, preparation, and maintenance of the apparatus described in this section, unless these are used frequently and constitute a normal sequence of the procedure, in which case place these directions in the "Procedure."

8.3.5.10 List together in a final paragraph with the subheading "Other Equipment" all the commonly used glassware, with sizes, and apparatus required and not previously described. This list, together with the other items, will serve as a checklist for the prospective user.

8.3.5.11 **In no case may materials or apparatus be cited in a Standard in a manner that appears exclusionary or inconsistent with the TAPPI Antitrust Policy.**

8.3.6 *Reagents and materials*

8.3.6.1 As with "Apparatus," list alphabetically reagents, solutions, color standards, etc., required for the Standard, under the appropriate heading. Enter the name of each item in italics (underlined in typewritten manuscripts) as a subheading. Give the chemical formulas of the reagents and, if necessary, provide directions for their preparation. If the directions are lengthy, place them in the appendix. Include the desired concentration of reagents, if significant, followed by instructions for preparation and standardization (if required), using the imperative mood and concise descriptions. Spell out the names of chemicals and follow with the chemical formula; subsequent references may be to the formula where they can be clearly and efficiently specified in this manner. Exception: always spell out the word "water" and the names of substances in their elemental state (for example, use "lead" rather than "Pb" or "oxygen" rather than "O_2"). If the reagent is to be used as purchased and not diluted, dissolved, or purified, state the chemical formula as given by the manufacturer.

8.3.6.2 List all reference materials which would fit into the category of reagents and materials (as opposed to apparatus). These are reagents distributed by organizations whose competence and performance in the control and maintenance of these reference materials are generally recognized. Do not list the organizations in the Standard, however; instead refer the user to the TAPPI Reference Materials List and notify the Standards Administrator as to which suppliers of reference materials exist so they can be added to the list.

8.3.6.3 Under a final subheading "Other Materials," add a list of generally available materials. This paragraph should include: the common reagents, such as dilute acids, bases, and solutions (other than standardized solutions); usual reagents which can be briefly and sufficiently described, such as "dilute sulfuric acid (1 part concentrated H_2SO_4 in 99 parts water)"; and common indicators. The expression "5% solution (w/v)" means 5 g of anhydrous materials dissolved in water and diluted to 100 mL. If required, specify concentrated acids or bases by their specific gravity or percentage by weight.

8.3.6.4 The use of analytical reagent grade chemicals and distilled water is assumed in all TAPPI Standards unless otherwise specified, or where there is clearly no need for this degree of purity.

8.3.6.5 Use generic descriptions of chemicals and reagents which are sufficiently complete to allow the user of the equipment to locate the needed item using readily available supplier catalogs and buyer's guides. In these descriptions state the required properties of the material or apparatus in performance or characteristic based terms, rather than trade names or trademarks. [For example, "...petrolatum or petroleum jelly..." rather than Vaseline™.]

8.3.6.6 In cases where a WGC or SSIG finds that a chemical or reagent from a specific source is required for satisfactory performance of a procedure, or is aware of only a single chemical or reagent that permits the procedure to be performed, this fact should be indicated in the Standard. In cases where this is done, however, the phrase "...other chemicals or reagents complying with the description of (item required) may work equally well..." should be placed immediately following the chemical or reagent description. (For example, "...*indicator solution*, a 0.5% (w/v) of [state the exact chemical name here] in distilled water. Keystone RediPuR™ [chemical name] was used for the studies reported in the precision section and found satisfactory. Other sources of [chemical name] may be available and may work equally well.")

8.3.6.7 In all cases where general or specific equipment is required for an analysis, it is the responsibility of the WGC to notify the Standards Administrator that suitable sources(s) should be added to the Suppliers List.

8.3.6.8 **In no cases may chemicals or reagents be cited in a Standard in a manner that appears exclusionary or inconsistent with TAPPI's Antitrust Policy.**

8.3.7 *Statement of Accuracy*

Statements addressing precision are optional for TAPPI Standards that are not Test Methods, but which produce a numerical result. If precision statements are used, state precision, degree of agreement expected between results, in terms of repeatability and reproducibility as defined in TAPPI T 1200 "Interlaboratory Evaluation of Test Methods to Determine TAPPI Repeatability and Reproducibility." It is essential to indicate the number of determinations per result for which the precision statement was calculated.

8.3.8 *Keywords* (mandatory)

8.3.8.1 List appropriate terms for indexing, selected from both the title and body of the document and including general, vernacular, and trade terms. These terms are the basis for preparing index terms.

8.3.8.2 To assure consistency in selecting keywords for indexing purposes and in selecting the proper form of a keyword, use the Thesaurus of Pulp and Paper Terminology, formerly published by the Institute of Paper Science and Technology, and currently published by Elsevier. Terms that appear in this thesaurus are preferred keywords and shall be used in the majority of cases. However, the Q&SMC shall maintain a supplemental keyword list which is included as Appendix 2 in these guidelines. Included on this list will be terms that Q&SMC has chosen as part of the supplement to the Thesaurus.

8.3.8.3 The Working Group Chairman should select keywords and include them in the draft, but these keywords must be reviewed by the TAPPI Standards Administrator for their acceptability in accordance with the thesaurus and the supplemental list. If the Working Group Chairman and/or the TAPPI Standards Administrator determine that, for ease of use or clarity, additional terms need to be included in a particular Standard, then these terms shall be approved by the Q&SMC. When a majority of the members of Q&SMC approve the inclusion of a new keyword, the new keyword shall be added to the supplemental list and to the Standard for which it was proposed.

8.3.9 *Additional information* (mandatory)

The first paragraph shall state, "Effective date of issue: (to be assigned)." TAPPI Headquarters will insert the effective date of issue upon publication. Subsequent paragraphs may be added to this section to include any other information that would be helpful or useful for the user of the Standard.

8.3.10 *Literature cited*

8.3.10.1 In the text, in parentheses and italics (underscore on a typewriter), add the reference numbers of the literature citations consecutively, i.e., (*1*), (*2*), (*3*), etc.

8.3.10.2 List only literature cited in the text. These citations should be to journal articles, books, patents, or other publications that pertain to background information or supporting data on the Standard. Number the citations in the order of their appearance in the text. Give authors and complete titles, source, etc.

8.3.10.3 Do not include restricted publications that are not generally accessible. Do not reference private communication unless records of such communication have been placed in the Standard's file at TAPPI.

8.3.10.4 Citations must be complete and accurate. This is the responsibility of the Working Group Chairman.

8.3.11 *References*

List the title of any documents, including other TAPPI documents or documents from other societies, which may be useful or necessary (or are referenced) in the understanding of the Standard. Do not include restricted publications that are not generally accessible. Do not reference private communication. It is the responsibility of the Working Group Chairman to make sure that references are complete and accurate.

8.3.12 *Appendixes*

Include here any lengthy detailed description of apparatus, instructions for calibrating or standardizing apparatus, operating instructions and adjustments for specific makes of apparatus to make them comply with the Standard involved, development of equations or theory, charts or supplementary information for computations, or anything else too extensive for convenient inclusion in its logical place in the text.

8.4 Checklist

Appendix 4 shows a checklist relating to the proper format for drafts. Use this checklist during the development or review of a Standard to make sure all requirements have been met. Include a completed checklist with the final draft to be balloted.

9. Responsibilities of Working Group Chairmen

9.1 The Working Group Chairman (WGC) is appointed for a particular Work Item by the Standards Administrator. In most cases, the WGC will already be a member of the SSIG, but if this is not the case, he/she shall be added to the SSIG upon appointment by the Standards Administrator. The WGC may set up a working group to work on the assignment, but ultimate responsibility for development of the Standard belongs to the WGC. The Working Group members may or may not be voting members of the SSIG, but any who are not and need to join shall confirm this interest with the Standards Administrator and be added as members of the SSIG.

9.2 A WGC should read and be familiar with the guidelines governing the Standards program as outlined in this manual.

9.3 The WGC submits drafts for balloting to the Standards Administrator as described in 6.4.6 of this manual. The WGC should use Section 7 of this manual as a style guide in preparing drafts of Test Methods and Standard Practices or Section 8 in preparing drafts of other types of Standards

9.3.1 *Preparation of precision statement.* Official and Provisional Test Methods require a statement of precision (repeatability for Provisional Methods; repeatability and reproducibility for Official Methods). The working group chairman may use data gathered from round robin tests to develop the statement. TAPPI has an agreement with the Collaborative Testing Service for assistance in gathering data to develop the statement, but it is the responsibility of the working group chairman to develop the wording of the actual statement for the method, based on the statistical data provided and commenting on the technical issues regarding unusual data.

9.3.1 *Checklist for developing precision data.* The working group chairman shall follow these steps in developing precision statements when data collected by Collaborative Testing Service is used:

(1) Develop a list of laboratories that have expressed willingness to participate in a round robin test.
(2) Gather appropriate samples to be used in the round robin.
(3) Contact Collaborative Testing Service and request assistance in gathering data; CTS will then contact TAPPI with an estimated cost and to receive final approval to proceed
(4) Provide samples and list of participating laboratories to CTS.
(5) Receive final report from CTS after round robin has been conducted.
(6) Write precision statement for insertion into the method, basing it upon the statistical data provided and commenting on the technical issues regarding unusual data.

9.4 The WGC will receive from the Standards Administrator a tabulation of any SSIG ballot along with copies of all comments (see 6.4.6.4). Enclosed in this package will be a tabulation sheet (which shows the voting results and provides space for resolution of comments and negatives), a tally sheet (which lists all SSIG members and records each vote), copies of all comments, a form for resolution of comments and negatives, and a copy of the draft.

9.5 *Resolution of negatives.* There are several ways a negative on a SSIG ballot may be resolved:

9.5.1 The WGC may agree with the negative comment and incorporate it into the next draft.

9.5.2 The WGC may contact the SSIG member who cast the negative vote and resolve the negative with the SSIG member. The WGC may agree to accept the comments, the SSIG member may withdraw the negative, or a compromise between the two may be reached.

9.5.3 The WGC may deem that the negative comment is nonpersuasive. This would be the case if the comment were strictly editorial or if the WGC could show that the comment was based on incorrect information.

9.5.4 The WGC may deem the negative comment to be unrelated to the item balloted. For example, a negative vote with the comment "Our laboratory does not use this procedure" would fall into this category since the Standard was balloted for its technical accuracy, not its use. (Lack of use in general may be a criterion for withdrawing or reclassifying an outdated Standard, however).

9.6 *Documentation of resolution of comments and negatives.* After comments have been addressed, the WGC shall make copies and complete one of the "Resolution of Comments and Negatives" forms for each separate voter who made a comment or voted negatively. The form should be completed in a fashion that clarifies how each comment was addressed. Working group chairmen must either send copies of the "Resolution of Comments and Negatives" form to all voters who submit negative votes with comments or must contact the negative voter in writing and submit a copy of this correspondence when the report is returned to the Standards Administrator. Appendix 3 shows the form "Resolution of Comments and Negatives." All forms, including resolution of comments from affirmative or abstention votes, shall be submitted to the Standards Administrator as part of the completed WGC Report as described in 9.7.

9.6.1 If a WGC has difficulty resolving one or more negatives or comments, then he/she shall note this appropriately on the "Resolution of Comments and Negatives" form and request a vote by the responsible SSIG on the specific comment(s). See Section 4.6.11 for details of the voting process. If a vote is taken at a meeting, a quorum shall be considered to be at least 51% of the SSIG members present in person or by proxy, and a majority vote of those present will determine the acceptance or rejection of the negative or comment. If a vote is taken by ballot via either email or letter, 51% of the voting SSIG members must return a ballot in order to be a valid vote, and a majority of those voting, not counting abstentions, will determine the acceptance or rejection of the negative or comment. The WGC shall then make adjustments accordingly on the next draft and return the report to the Standards Administrator within 30 days after the vote. If this 30-day period passes and no report has been received, then procedures in 6.4.6.13 are to be followed. See Section 6.4.6.12 for procedure to be followed after the SSIG vote.

9.6.2 The Standards Administrator shall notify the SSIG and any other submitters of comments regarding the resolution of comments, both those made by the WGC and those made by a vote of the SSIG. If an SSIG member or any other submitter of comments disagrees with the resolution of his/her comment, he/she should file an appeal with the Standards Administrator in writing prior to the SARG review as outlined in Section 6.4.7.

9.7 After all negatives have been resolved, all comments have been addressed, and such resolutions have been noted by the WGC on the "Resolution of Comments and Negatives" form, the WGC should sign and date the tabulation form, attach any pertinent material (including a copy of each completed "Resolution of Comments and Negatives' form, any other comments that need clarification by the WGC, and any additional instructions for TAPPI staff), and return it within 90 days to the Standards Administrator along with a revised draft. The revised draft shall be simply a marked-up copy of the draft that was sent to the WGC with the tabulation. Drafts should not be retyped by the WGC, since drafts are in the TAPPI word processing system and should not have to be completely re-keyed each time in order to reduce possibility of error.

9.8 After a draft has received SSIG approval as outlined in 6.4.6 and its subparagraphs, it will proceed to SARG Review as outlined in 6.4.7. If any negative votes are cast at this level, they will be sent to the WGC, who will contact those SARG members who cast the negative votes and work out a resolution of the comments with them. If the WGC and the SARG members who voted negative on approval of the final draft determine that the negative was due to a procedural error that can be resolved by the WGC without making substantive changes in the draft, then the WGC shall: (1) rectify the error(s); (2) request that notification of any resulting editorial changes, if any are required, or notification of the rectification of the error(s) be sent to the SSIG from the Standards Administrator; and (3) resubmit the final draft, with any editorial changes deemed necessary to

the Standards Administrator for placement on the next agenda of SARG for final approval. If the WGC and the SARG members who voted negative determine that the resolution of the negative votes will result in substantive changes in the Standard, the WGC shall prepare a new draft for another ballot to the SSIG.

9.9 Refer to Section 6.4.10 for information regarding the SARG procedures and the public review that will accompany the placement of the Standard on the SARG agenda.

9.10 After SARG approval, the Standard will be published and a copy sent to the WGC.

Appendix 1.

History of Standards Program

This summation of the history of the TAPPI Test Methods Program is adapted from an article, "The TAPPI Test Methods Program," originally presented by Charles Bohanan of the TAPPI staff at the 1992 TAPPI Process and Product Quality Conference. The original article has been edited to eliminate duplication of information found elsewhere in these regulations and style guidelines, and also to update the information as of June 2009.

When Frank L. Moore, president of the American Pulp and Paper Association (APPA) in the early years of the 20th century, spoke to an annual meeting of the American Chemical Society on "The Chemist in the Pulp and Paper Association," he emphasized the growing need for standardized testing in the industry. It was only a short time later that this need was addressed with the formation of a technical division of APPA that would eventually become the Technical Association of the Pulp and Paper Industry (TAPPI).

Otto Kress of the Forest Products Laboratory perhaps deserves the most credit with proposing that technical committees should be formed to address two of the stated purposes of the fledgling organization: "to provide means for the interchange of ideas among its members" and "to encourage original investigation." Kress wanted these committees to develop "standards for analysis" which he believed were "absolutely necessary for success in the modern world." Kress presented these views in a paper delivered at a meeting of the APPA Technical Section in the fall of 1915, where the attendees formally votes to become a new, autonomous society: TAPPI.

A detailed report on paper testing and a paper on groundwood quality and how to test for it were among the presentations at a joint meeting of TAPPI and the Technical Section of CPPA in September 1917. This meeting was considered to be the first TAPPI meeting, which had true impact on the industry, and is probably the time when the importance of developing test procedures became apparent to the members.

In the third series of *Technical Association Papers* (1920) can be found the first evidence of round robin testing, where a report from E.C. Tucker, Chairman of the Committee on standard Methods of Testing, states that samples were being sent to laboratories of TAPPI members for analysis using methods that had been developed by TAPPI committees. Tucker encouraged the participants to get familiar with the methods and follow them closely so that accurate results and comparisons could be made.

He stated that the reports would be carefully collated so that the committee could report at the next annual meeting that these methods were being proposed as standard methods of TAPPI. Reports from this committee became a regular feature of *Technical Association Papers*, the precursor of *TAPPI Journal*.

Also in 1920, Frederick C. Clark, Chairman of the Paper Testing Committee, one of TAPPI's earliest working groups dealing primarily with development of methods, issued a pamphlet under TAPPI's name entitled "Paper Testing Methods: Microscopical, Chemical and Physical Processes Described with an Account of the Apparatus Employed." A revised edition was published in 1922. Succeeding Mr. Clark was Frederick A. Curtis, who guided the committee in adding a number of new methods required due to developments in the industry. In 1925, the next chairman, B.W. Scribner, oversaw a survey which indicated that the current needs in test procedures had been met and that it would be appropriate for TAPPI to adopt an official format for testing procedures and issue them as official standards of the association. This meant that more adequate specification of test conditions, development of uniform nomenclature, statements of tolerances, and methods of expressing results had to occur. A plan to handle these new requirements was devised at a meeting at the National Bureau of Standards on July 27, 1925.

At that time, the requirements for approving a TAPPI Standard included approval by the technical committee, followed by a letter ballot to all members of the association, with majority approval required. Provisions were made to revise existing methods in the same manner. Once the requirements were endorsed by the TAPPI Executive Committee, several methods were adopted and published in a 1928 edition of "Paper Testing Methods," no longer a pamphlet, but a bound book.

In the early 1930's, testing was an increasingly important area of concern, as quality, economy, and efficiency became primary goals of the industry. As one TAPPI member wrote: "Standardization of methods does not stifle the spirit of competition…but rather enhances it…it provides incentives…(and) stimulates the individual and collected efforts of all concerned. In 1932, virtually the entire TAPPI section of *Paper Trade Journal* was filled with testing procedures.

To respond to this industry need, the TAPPI Standards Committee was formed in 1933, and the first set of loose-leaf methods was issued shortly thereafter. It was during the days between the two World Wars that many of the test methods still in use today were published; over 100 standards had been adopted by 1939. James d'A Clark, Chairman of the Testing Division, who was instrumental in developing chemical methods and microscopic analysis, did his part as World War II began by leading a task force to develop test methods needed by the U.S. Army and U.S. Navy. The 1945 Standards Committee announced that TAPPI methods were "intended to be referee methods of high precision." A.E. Bachmann, TAPPI President in 1950, was quoted as saying that "it is principally in the testing of their materials, products and process variables that TAPPI members, as a whole, find a focal point of greatest common interest."

The 1950's found the Testing Division working to address the need to identify fibers by examining their microscopic nature. Several hundred fiber samples were received as a result of a questionnaire sent to TAPPI members; these fibers were forwarded to the Institute of Paper Chemistry, which used them to create the TAPPI Fibrary. Unknown fibers could be identified by comparison to these known samples, and TAPPI members could request fiber samples from the Fibrary and get a detailed explanation of their origin and history.

Up until the mid 1960's the TAPPI Standards not only covered testing procedures, but also included product specifications. When a Long Range Planning Committee was formed in 1967, it was concluded that TAPPI's strength was in the area of testing procedures, and that specifications should be the province of groups such as the American Paper Institute (API, a trade organization, which later merged with another group to become the American Forest and Paper Association) and the International Organization for Standardization (ISO). The committee also recognized the increasing importance of TAPPI's relationship to groups such as ISO as overseas trade and multi-national companies got involved in manufacturing.

For a number of years, there was a great deal of interaction between TAPPI and other standards-writing groups. Joint committees between TAPPI and the American Society for Testing and Materials (ASTM) existed, and TAPPI served as Secretariat for Committee P3 of the American National Standards Institute (ANSI). Based on recommendations of committees during test method balloting, certain methods were submitted to ANSI for consideration as national standards, and some of these were moved on to ISO for approval as international standards. Rising costs of administration and limited staff curtailed most of this activity by the mid-1980's, with methods no longer being submitted to ANSI, and with API looking out for the paper industry's interest in relation ISO.

The last joint TAPPI-ASTM Committee (Wax Testing) was disbanded in 1985, and all Wax Testing methods were withdrawn by TAPPI and handled solely by ASTM. An "unofficial" relationship with ASTM still exists, however; ASTM has obtained permission to reprint certain TAPPI methods in the "gray pages" of its standards book and has withdrawn the technically equivalent ASTM procedures. There is still a provision for joint committee work between TAPPI and other societies, but the test method guidelines adopted in the revision of August 2000 state that the Quality and Standards Management Committee may grant exceptions to the guidelines or adopt use of the other society's guidelines as appropriate on a case-by-case basis. This and other changes in this wording over the years were made to allow for joint activities between societies, while eliminating the administrative confusion that frequently resulted when two societies balloted different associations committees on the same method at different times.

As TAPPI looked into its antitrust compliance procedures and policies in 1979, changes were recommended in the terms used to describe testing procedures and suggested changes to head off potential misunderstandings about the nature of this activity. As a result the TAPPI Board of Directors approved the renaming of "standards" as "test methods" and the renaming of the Standards Committee as the Test Methods Review Board. All references to these terms in the TAPPI Bylaws and the test procedure guidelines and regulations were accordingly changed. Over the next two decades, the users of TAPPI Test Methods continued to use the term "TAPPI Standard," despite the elimination of this term from all TAPPI documents. "TAPPI Standards" remained a common term around the world as far as TAPPI methods were concerned.

When the various revisions to the guidelines in the late 1990's and in the year 2000 came about, the word "standard" crept back into the vocabulary. In most cases, its preferred use became as an adjective ("Standard Test Method" or "Standard Practice"). Although antitrust concerns are still of utmost importance to TAPPI and all other associations, it is not the use of the term "standard" that can bring about problems; rather, it is improper practices and procedures that do so. Checks and balances in the development process for Test Methods remain in place, no matter what the methods are called. By the

end of the year 2000, the term “Standard” appeared once again more in common use in regards to the TAPPI Test Methods.

In 1981-1982, problems surfaced regarding the timely review of test methods. As a result the Board of Directors appointed a Blue Ribbon committee to determine if the management of the test methods program needed reorganization. This committee recommended that the primary responsibility for the accuracy of a method should lie with the responsible technical committee, and that the overseeing body for test methods should serve in a management function, wherein it would set time limits for review of methods as well as promote the creation of new methods based on advancements in instrumentation and technology.

At the March 1982 Board meeting, the Test Methods Management Committee (TMMC) was established, and the old Test Method Review Board was abolished. The TMMC redesigned the approval procedures for test methods so that the technical and editorial functions remained primarily with the technical committees, while the TMMC dealt with problems encountered in reviewing methods in a proper time frame. The TMMC was given responsibility for the guidelines that describe the procedures for test method approval and also was responsible for making recommendations to the Board for changes needed in the “Regulations Governing Test Methods.”

The new system had a positive effect on method review. Records from 1981 show that 63% of the Official and Provisional Methods were overdue for review and reissue. By September of 1985, only 25% were overdue, and this turnaround has held up well over the years. In June of 1992, a report to the TMMC showed that 31% were over five years old.

In the mid-1990’s, TAPPI began a strategic planning process that examined all of the activities within TAPPI. The importance of test methods was reaffirmed when the TAPPI Strategic Plan contained a Strategic Outcome stating “The industry will effectively employ tools and techniques for continuous improvement of process and product quality.” As the strategic plan changed over the next few years, the emphasis on test methods remained, with the current plan including under Strategic Outcome 1 the following: “Develop globally accepted test methods as needed by the industry and maintain the integrity of existing test methods.”

As a result, changes came to the Test Methods Management Committee. The group’s scope was expanded to not only oversee the test methods program, but also to govern the regulations for TAPPI Technical Information Papers (TIPs) and provide information needs for the industry in the areas of international quality and environmental management systems standards. The new Board committee was named the Quality and Standards Management Committee (QSMC), and it remained a committee chaired by a member of the TAPPI Board of Directors through 1999.

In 2000, TAPPI began another project to examine how TAPPI was structured in light of the Strategic Plan and the changes taking place in the industries TAPPI serves (the “2010 Initiative”). As a result of the 2010 Committee’s recommendations, a number of Board committees were eliminated or restructured. QSMC remained a committee reporting to the Board, but no longer was it required to have a Board member as a chairman.

One of the first things QSMC had to do once it received the recommendations from the 2010 Committee was to revise the test method guidelines to eliminate the dependence on the existing Division and Committee system. The 2010 Committee had recommended more flexibility among the Divisions and Committees as far as their structure, governance, and ability to form “communities” of special interests were concerned. It therefore became apparent that the existing structure, on which all of the test method regulations were based, may not exist in a consistent format throughout the TAPPI organization. The regulations, therefore, were rewritten in 2000 to change from the technical committees being the focus of the development process to the development of Standard-Specific Interest Groups (SSIGs) for each Test Method. These SSIGs essentially took the place of the old technical committees in the process. Refer to the main sections of “TAPPI Test Methods and Standard Practices: Regulations and Style Guidelines” for details on the procedures.

Although the development of new methods and the review of old ones continue to be a major focus of TAPPI, the increasing importance of global issues looms over the industry. The acceptance of the ISO 9000 series on quality standards, the changes in the European Community, the worldwide economic changes that occurred in the last decade of the 20th century, and the improvements in worldwide communications have resulted in a shifted emphasis to quality management and more efficient ways of serving customer needs throughout the world.

TAPPI has taken steps to keep up with these changes. More liaison with ASTM is in place, with TAPPI representation on the test methods subcommittee of D6; more synergy and less duplication of effort should result. More individuals with ties to ISO are being appointed to QSMC, and TAPPI is well represented in the activities of the ISO TC 6 Committee on Paper, Board, and Pulps. The Technical Advisory Group (TAG) to ISO TC 6 has been administered by AF&PA since the early 1980's, but in the fall of 2000, AF&PA announced that it would be dropping its support of this activity. At the QSMC meeting in November 2000, QSMC recommended to the TAPPI President that TAPPI take over this activity in January 2001.

In 2006, about 250 methods comprise the set of TAPPI test procedures, a substantial increase over the 21 or so procedures in the first publication in 1920.

In 2005, a proposal was presented to expand the definition of TAPPI Standards to include not only Standard Test Methods, but also Standard Guidelines, Specification, and Glossaries. The revision of this manual in June 2006 reflect this change.

In 2009, The Quality and Standards Management Committee revised the Standards regulations in order to qualify as an accredited standards development organization from the American National Standards Institute (ANSI)

Standards, one of the original reasons for TAPPI's existence, continue to play a major part in the association's service to its members and the industry, primarily because of the dedicated work of the volunteers. The ongoing efforts of these professionals will go far in keeping the TAPPI Standards program a viable force in the years to come.

REFERENCES

1. Sudia-Skehan, S., *1915-1990: TAPPI's First 75 Years: From Distinguished Past to Dynamic Future*, TAPPI, Atlanta, GA, 1990. Also research notes used in the preparation of this publication.
2. "TAPPI Test Methods and Standard Practices: Regulations and Style Guidelines," TAPPI, Atlanta, GA, 2000.
3. "Paper Testing Methods: Microscopical, Chemical and Physical Processes and Apparatus Employed," prepared by the Committee on Paper Testing, TAPPI, 1928
4. Technical Association Papers, Third Series, TAPPI, 1920.

Appendix 2.

TAPPI Antitrust Policy

Statement of Antitrust Policy

TAPPI is a professional and scientific association organized to further the application of the sciences in the paper and related industries. Its aim is to promote research and education in the areas of interest of its members. TAPPI is not intended to, and may not, play any role in the competitive decisions of its members or their employers, or in any way restrict competition in the paper and related industries.

Through its seminars, short courses, technical conferences and other activities, TAPPI brings together representatives of competitors in the paper and allied industries. Although the subject matter of TAPPI activities is normally technical in nature, and although the purpose of these activities is principally educational and there is no intent to restrain competition in any manner, nevertheless the Board of Directors recognizes the possibility that the Association and its activities could be seen by some as an opportunity for anticompetitive conduct. For this reason, the Board has taken the opportunity, through this statement of policy, to make clear its unequivocal support for the policy of competition served by the antitrust laws and its uncompromising intent to comply strictly in all respects with those laws.

In addition to the Association's firm commitment to the principle of competition served by the antitrust laws, the penalties which may be imposed upon both the Association and its individual and corporate members involved in any violation of the antitrust laws are so severe that good business judgment demands that every effort be made to avoid any such violation. Certain violations of the Sherman Act, such as price-fixing, are felony crimes for which individuals may be imprisoned for up to three (3) years or fined up to $350,000, or both, and corporations can be fined up to $10 million for each offense. In addition, treble damage claims by private parties (including class actions) for antitrust violations are extremely expensive to litigate and can result in judgments of a magnitude which could destroy the Association and seriously affect the financial interests of its members.

It shall be the responsibility of every member of TAPPI to be guided by TAPPI's policy of strict compliance with the antitrust laws in all TAPPI activities. It shall be the special responsibility of committee chairmen, Association officers, and officers of Local Sections to ensure that this policy is known and adhered to in the course of activities pursued under their leadership.

To assist the TAPPI staff and all its officers, directors, committee chairmen, and Local Section officers in recognizing situations which may raise the appearance of an antitrust problem, the Board will as a matter of policy furnish to each such persons the Association's General Rules of Antitrust Compliance. The Association will also make available general legal advice when questions arise as to the manner in which the antitrust laws may apply to the activities of TAPPI or any committee or Section thereof.

Antitrust compliance is the responsibility of every TAPPI member. Any violation of the TAPPI General Rules of Antitrust Compliance or this general policy will result in immediate suspension from membership in the Association and immediate removal from any Association office held by a member violating this policy.

General Rules of Antitrust Compliance

The following rules are applicable to all TAPPI activities and must be observed in all situations and under all circumstances without exception or qualification other than as noted below.

1. Neither TAPPI nor any committee, Section or activity of TAPPI shall be used for the purpose of bringing about or attempting to bring about any understanding or agreement, written or oral, formal or informal, express or implied, among competitors with regard to prices, terms or conditions of sale, distribution, volume of production, territories or customers.

2. No TAPPI activity or communication shall include discussion for any purpose or in any fashion of prices or pricing methods, production quotas or other limitations on either the timing or volume of production or sale, or allocation of territories or customers.

3. No TAPPI committee or Section shall undertake any activity which involves exchange or collection and dissemination among competitors of any information regarding prices or pricing methods.

4. No TAPPI committee or group should undertake the collection of individual firm cost data, or the dissemination of any compilation of such data, without prior approval of legal counsel provided by the Association.

5. No TAPPI activity should involve any discussion of costs, or any exchange of cost information, for the purpose or with the probable effect of
   a. increasing, maintaining or stabilizing prices; or,
   b. reducing competition in the marketplace with respect to the range or quality of products or services offered.

6. No discussion of costs should be undertaken in connection with any TAPPI activity for the purpose or with the probable effect of promoting agreement among competing firms with respect to their selection of products for purchase, their choice of suppliers, or the prices they will pay for supplies.

7. Scientific papers published by TAPPI or presented in connection with TAPPI programs may refer to costs, provided such references are not accompanied by any suggestion, express or implied, to the effect that prices should be adjusted or maintained in order to reflect such costs. All papers containing cost information must be reviewed by the TAPPI legal counsel for possible antitrust implications prior to publication or presentation.

8. Authors of conference papers shall be informed of TAPPI's antitrust policy and the need to comply therewith in the preparation and presentation of their papers.

9. No TAPPI activity or communication shall include any discussion which might be construed as an attempt to prevent any person or business entity from gaining access to any market or customer for goods or services, or to prevent any business entity from obtaining a supply of goods or otherwise purchasing goods or services freely in the market.

10. No person shall be unreasonably excluded from participation in any TAPPI activity, committee or Section where such exclusion may impair such person's ability to compete effectively in the pulp and paper industry.

11. Neither TAPPI nor any committee or Section thereof shall make any effort to bring about the standardization of any product for the purpose or with the effect of preventing the manufacture or sale of any product not conforming to a specified standard.

12. No TAPPI activity or communication shall include any discussion which might be construed as an agreement or understanding to refrain from purchasing any raw material, equipment, services or other supplies from any supplier.

13. Committee chairmen shall prepare meeting agendas in advance and forward the agendas to TAPPI headquarters for review prior to their meetings. Minutes of such meetings shall not be distributed until they are reviewed for antitrust implications by TAPPI headquarters staff.

14. All members are expected to comply with these guidelines and TAPPI's antitrust policy in informal discussions at the site of a TAPPI meeting, but beyond the control of its chairman, as well as in formal TAPPI activities.

15. Any company which believes that it may be or has been unfairly placed at a competitive disadvantage as a result of a TAPPI activity should so notify the TAPPI member responsible for the activity, who in turn should immediately notify TAPPI headquarters. If its complaint is not resolved by the responsible TAPPI member, the company should notify TAPPI headquarters directly. TAPPI headquarters and appropriate Section, division or committee officers or chairpersons will then renew and attempt to resolve the complaint. In time-critical situations, the company may contact TAPPI headquarters directly.

TAPPI Guidelines for Submitting Copies of Correspondence to TAPPI Headquarters

TAPPI headquarters does require that copies of correspondence of an important nature and of non-routine matters be supplied in a timely fashion to TAPPI headquarters personnel connected with the committee or Section involved as shown below:

1. Plans regarding the activities of TAPPI committees or Sections.
2. Communications with other TAPPI committees or Sections.
3. Communications with persons or organizations outside TAPPI.
4. All written or recurring verbal complaints or criticisms of TAPPI activities.

All correspondence falling under the above-stated policy must be forwarded promptly to the appropriate TAPPI headquarters liaison person, preferably at the time of transmittal or receipt.

Appendix 3.

Resolution of Comments and Negatives Form

RESOLUTION OF COMMENTS AND NEGATIVES

Make as many copies of this form as necessary.
Use black or red ink **ONLY** for reproduction purposes.
Typographical/editorial changes may be incorporated without completing this form.

TAPPI T Number _____ Draft Number _____

Name of comment(s) or negative voter(s) _____
(use **only one sheet** for identical comments handled similarly from multiple voters)

Check as appropriate (see Section 9 of Standards Guidelines):

For comments (not negatives):

❒ Comment accepted and will be incorporated into next draft

❒ Contact made with voter(s) and the following action taken:

- ❒ Comment determined to be nonpersuasive and will not be incorporated
- ❒ Comment unrelated to the item balloted and will not be incorporated
- ❒ Compromise wording agreed upon as indicated in comments (below)

For negative votes and comments:

❒ Comment accepted and will be incorporated into next draft

❒ Contact made with voter(s) and the following action taken:

- ❒ Comment determined to be nonpersuasive and will not be incorporated; voter agrees to withdraw negative
- ❒ Comment unrelated to the item balloted and will not be incorporated; voter agrees to withdraw negative
- ❒ Compromise wording agreed upon as indicated in comments (below); voter agrees to withdraw negative

❒ Voter does not agree to withdraw negative; WGC requests:

- ❒ Item be discussed and voted upon by the responsible SSIG at a meeting or by letter ballot
- ❒ Specific item be balloted to SSIG either:
  - ❒ separately or ❒ along with next draft

Comments (attach extra sheets if necessary):

_____
_____
_____
_____
_____

WGC should send copies of this form to each negative voter. Voters who disagree with the resolution of comments or negatives should submit an appeal to the Standards Administrator in writing prior to the SARG review.

Signature of WGC_____ Date _____

Appendix 4.

Working Group Chairman's Checklists

Working Group Chairman's Checklist for TAPPI Standards

WI_____ T_____ Draft_____

Title_____

FOR TEST METHODS AND STANDARD PRACTICES

Have the following sections been included (as applicable):

- □ Title (mandatory)
- □ Introduction
- □ Scope (mandatory)
- □ Summary
- □ Significance (mandatory)
- □ Applicable Standards or Other Documents
- □ Definitions
- □ Interferences
- □ Apparatus
- □ Preparation
- □ Calibration
- □ Maintenance
- □ Reagents and materials
- □ Safety precautions (mandatory when applicable)
- □ Sampling, Test Specimens, and Test Units
- □ Conditioning
- □ Procedure (mandatory)
- □ Calculations or Interpretation of the Observations (mandatory for quantitative methods)
- □ Report (mandatory)
- □ Precision (mandatory)
- □ Keywords (mandatory)
- □ Additional information (mandatory; must include paragraph for Effective Date of Issue [date to be assigned after SARG Review] AND must include a brief descriptive paragraph noting significant changes in the standard)
- □ Literature cited
- □ References
- □ Appendixes

FOR STANDARDS THAT ARE NOT TEST METHODS OR STANDARD PRACTICES

Have the following sections been included (as applicable):

- □ Title (mandatory)
- □ Introduction
- □ Scope (mandatory)
- □ Safety precautions (mandatory when applicable)
- □ Content:
  - □ Definitions
  - □ Materials
  - □ Procedure
  - □ Specifications
  - □ Guidelines
  - □ Calculations or Interpretation of the Observations
- □ Statement of Accuracy
- □ Keywords (mandatory)
- □ Additional information (mandatory; must include paragraph for Effective Date of Issue [date to be assigned after SARG Review] AND must include a brief descriptive paragraph noting significant changes in the standard)
- □ Literature cited
- □ References
- □ Appendixes

FOR ALL: Have the following actions been taken, or have the following style guidelines been followed?

- □ Proper voice and mood for each section (see Guidelines Section 7.2.1 for Test Methods and 8.1.1 for other Standards)
- □ SI Units have been used
- □ All figures (line drawings and photographs) have been included, and captions noted
- □ Modified decimal system of paragraph numbering has been used
- □ All tables have been properly identified and included
- □ Trade names and trademarks have been avoided except in cases as described in Sections 7.4.9 and 7.4.10 (for Test Methods) or 8.3.5 and 8.3.6 (for other Standards) of the Guidelines
- □ Precision data (required for Test Methods ONLY):
- □ For quantitative Official Methods, repeatability and reproducibility included
- □ For quantitative Provisional Methods, repeatability included
- □ For all methods, precision data and calculations not found in published documents have been submitted
- □ Information about testing equipment, materials, and reference standards has been submitted to Standards Administrator for inclusion on Suppliers List or References Materials List, as appropriate

For drafts being submitted after a SSIG ballot:

- □ All negatives and comments have been addressed, and a complete "Resolution of Negatives and Comments" form has been submitted for each comment.
- □ Working Group Chairman's Report has been completed and next action indicated
- □ Most recent draft has been marked with changes, **including a summary of major technical changes under Additional Information**, for next draft and has been submitted.

Appendix 5.

Flow Charts

Chart 1
Balloting a TAPPI Standard

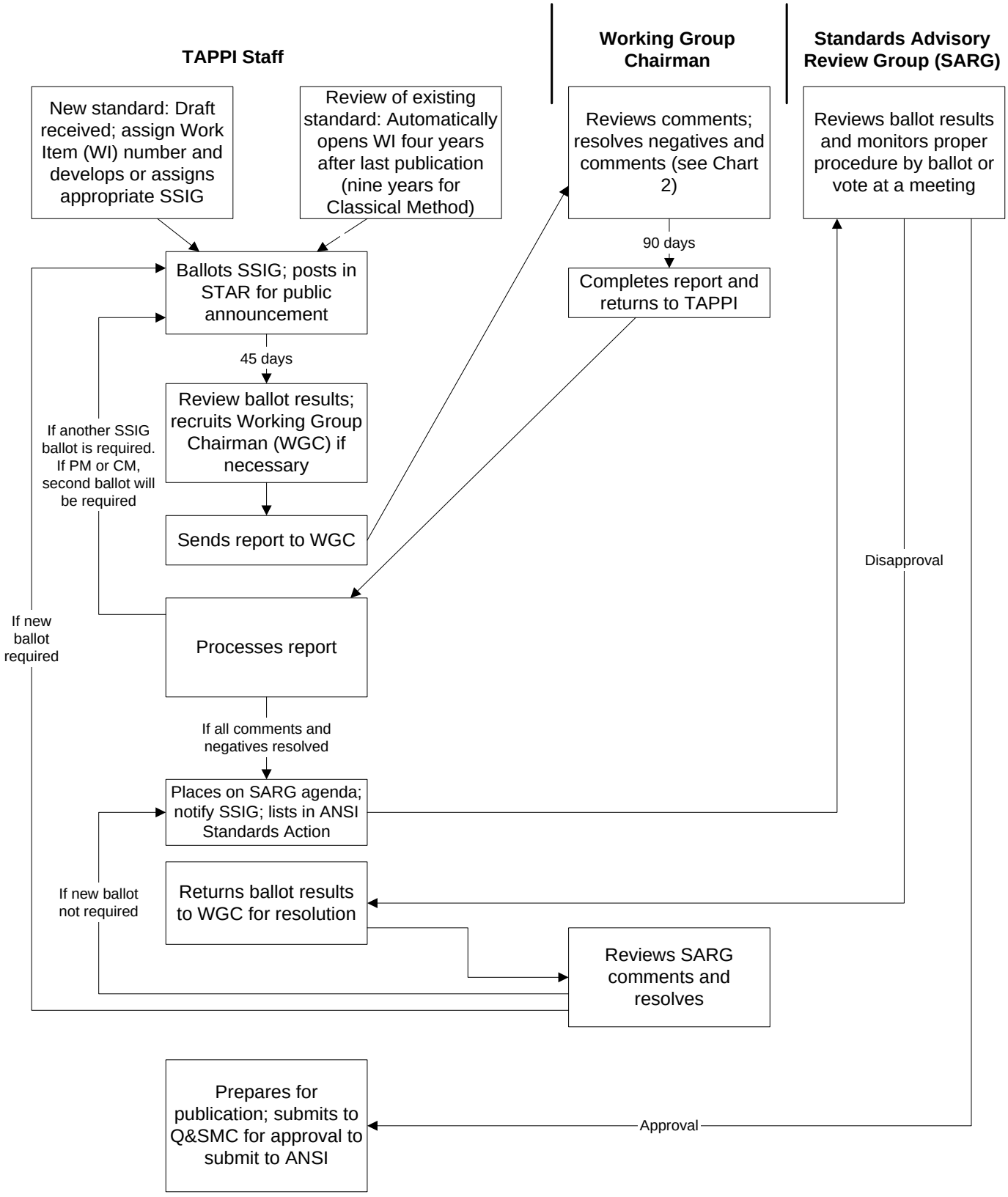


Chart 2
Resolution of Negatives

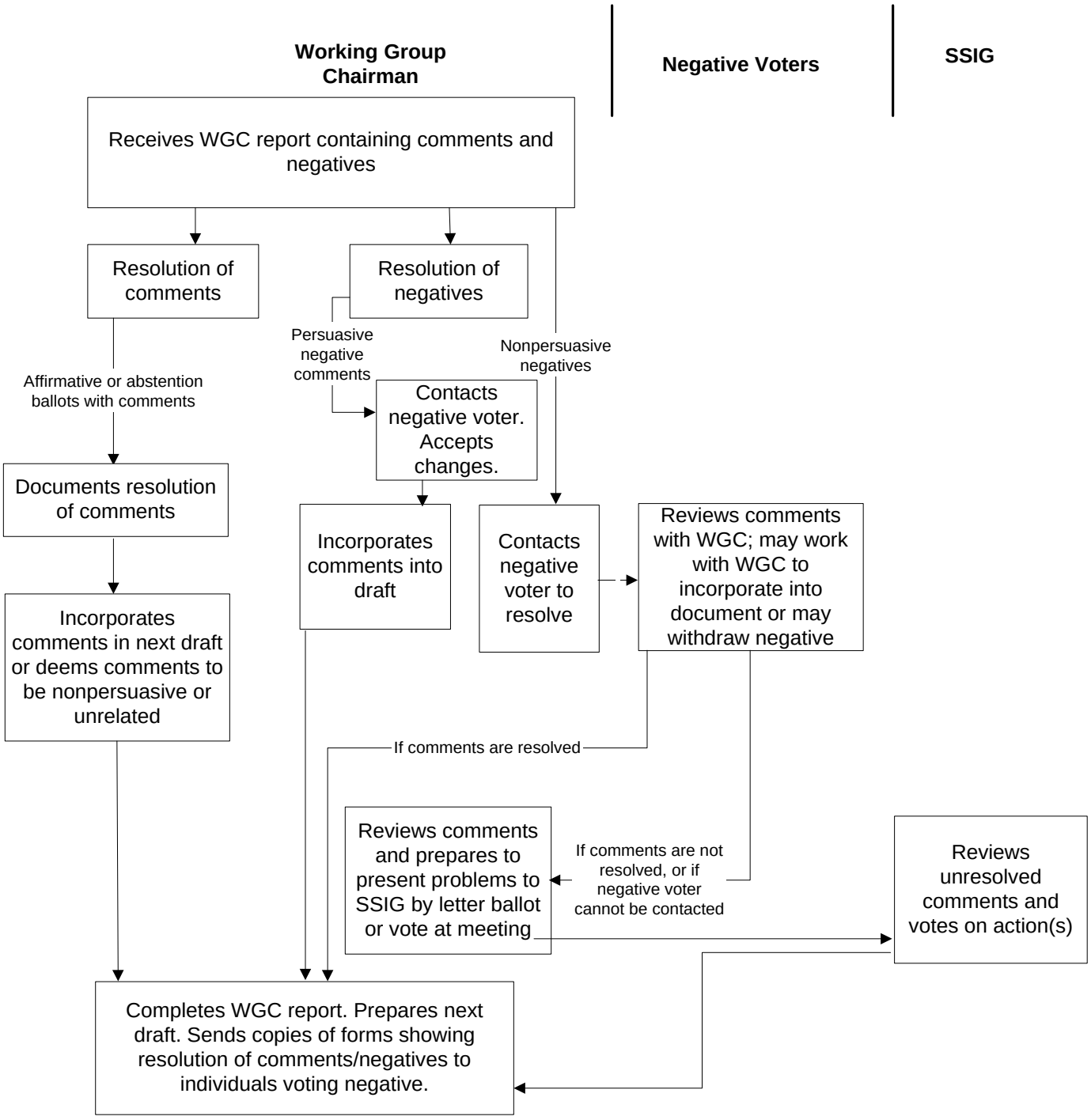
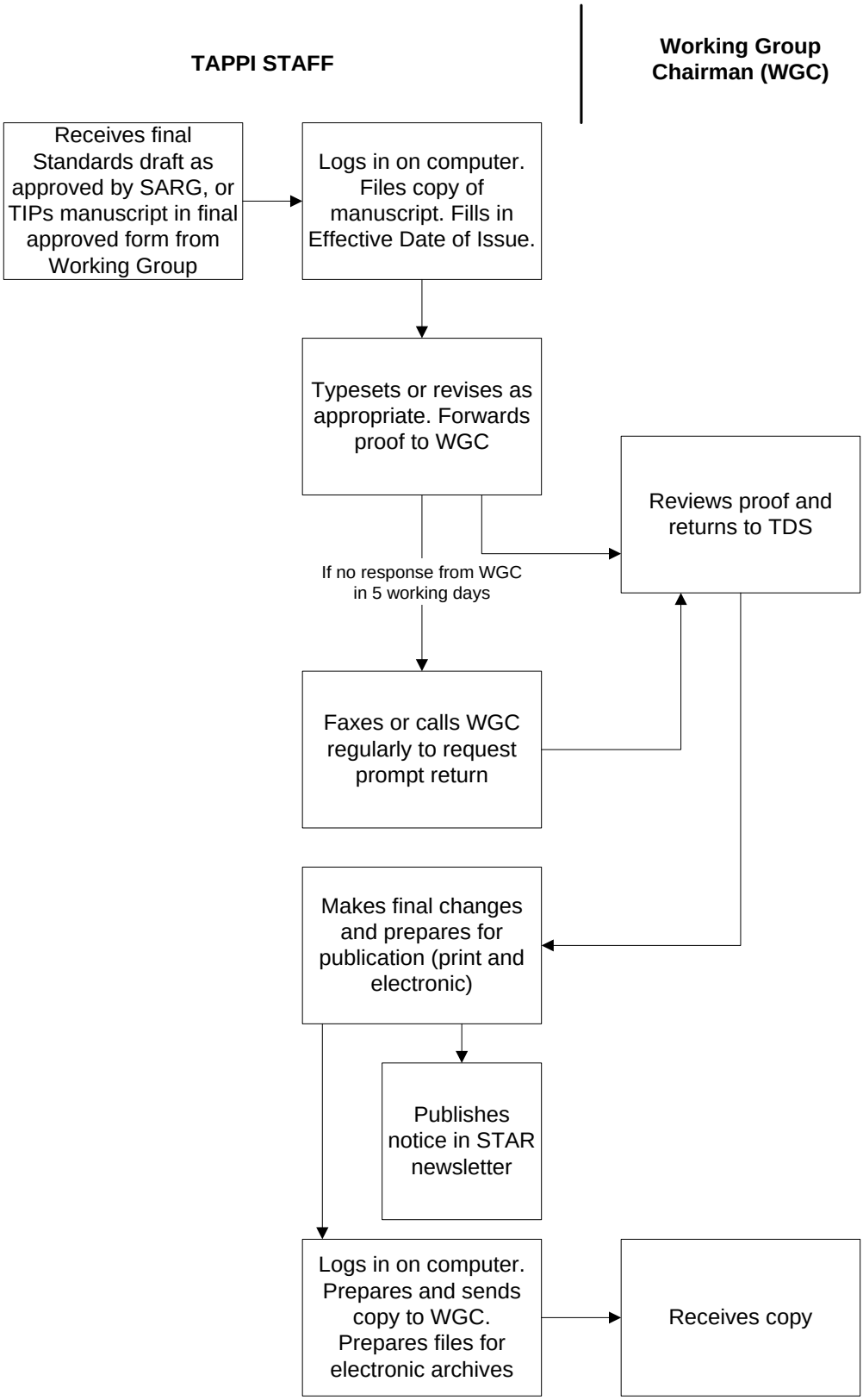


Chart 3
Production of Standards and Technical Information Papers



Appendix 6.

Supplemental Keyword List
(revised January 2013)

The following supplemental list of keywords includes **both** (1) terms that are *not* found in the Thesaurus of Pulp and Paper, but which have been approved by the Q&SMC for use as keywords for the Test Methods or Technical Information Papers listed, in accordance with paragraphs 7.4.18.1, 7.4.18.2, and 7.4.18.3 of the Test Method guidelines and paragraphs 4.3.8, 4.3.8.1, 4.3.8.2, and 4.3.8.3 of the TIPs Guidelines, **and** (2) terms that have been approved for addition in the next edition of the Thesaurus (indicated on this list as "To appear in the next published edition of the Thesaurus").

Airlaid nonwoven machines	To appear in the next published edition of the Thesaurus
Alkaline peroxide mechanical pulping	To appear in the next published edition of the Thesaurus
Alkaline peroxide mechanical pulps	To appear in the next published edition of the Thesaurus
Alkaline reserve	T 553
Alum	To appear in the next published edition of the Thesaurus
Backtrap mottle	To appear in the next published edition of the Thesaurus
Bankruptcy	To appear in the next published edition of the Thesaurus
Bids	To appear in the next published edition of the Thesaurus
Biodiversity	To appear in the next published edition of the Thesaurus
Bleach liquor	T 611, T 700
Bleached board	TIP 0404-14
Bleached chemithermomechanical pulping	To appear in the next published edition of the Thesaurus
Bleached chemithermomechanical pulps	To appear in the next published edition of the Thesaurus
Blowdown	TIP 0416-04
Boiler tubes	TIP 0402-31, TIP 0402-32
Bubbling fluidized beds	To appear in the next published edition of the Thesaurus
Business strategy	To appear in the next published edition of the Thesaurus
Butt welds	TIP 0402-31
Cartonboards	To appear in the next published edition of the Thesaurus
Cellulose whiskers	To appear in the next published edition of the Thesaurus
Char	To appear in the next published edition of the Thesaurus
Chlorine free bleaching	To appear in the next published edition of the Thesaurus
Chromium trioxide	T 619
Circulating fluidized bed boilers	To appear in the next published edition of the Thesaurus
Coefficient of friction	T 549
Computer graphics	To appear in the next published edition of the Thesaurus
Computer monitors	To appear in the next published edition of the Thesaurus
Concentricity	TIP 0304-56
Contact technique	TIP 0402-32
Contaminants	TIP 0404-38
Conversion factors	T 1210
Corrugated fluted crush test	T 824
Corrugated packaging	To appear in the next published edition of the Thesaurus
Creative paper	To appear in the next published edition of the Thesaurus
Deforestation	To appear in the next published edition of the Thesaurus
Demand	To appear in the next published edition of the Thesaurus
Diatomaceous silica	T 658
Digital printing	To appear in the next published edition of the Thesaurus
Drainage factor	TIP 0809-01
Drying rate	TIP 0404-07
Dry-laid nonwovens	TIP 0502-16
Durability	To appear in the next published edition of the Thesaurus
E-commerce	To appear in the next published edition of the Thesaurus
Edge nail strength	T 1004
Effective residual ink concentration (ERIC)	T NEW (WI 3020)
Elemental chlorine free bleaching	To appear in the next published edition of the Thesaurus
Elemental chlorine free pulps	To appear in the next published edition of the Thesaurus
Elliptical technique	TIP 0402-32
Engineered wood	To appear in the next published edition of the Thesaurus
Environmental regulations	To appear in the next published edition of the Thesaurus
Equilibrium moisture	T 550
Equivalent black area	T 213, T 437, T 563
Fiber glass mats	T 1006, T 1007, T 1008, T 1009, T 1010, T 1011, T 1012, T 1013, T 1014, T 1015, T 1016, T 1017
Financial loss	To appear in the next published edition of the Thesaurus
Financing	To appear in the next published edition of the Thesaurus

Flash cyclone	To appear in the next published edition of the Thesaurus
Flexible barrier materials	T 557
Flexible beam crush tester	TIP 0304-20
Float curl method	T 832
Foreign investment	To appear in the next published edition of the Thesaurus
Globalization	To appear in the next published edition of the Thesaurus
Graphical user interfaces	To appear in the next published edition of the Thesaurus
Greenhouse gases	To appear in the next published edition of the Thesaurus
Heating value	T 684
Hexenuronic acid	To appear in the next published edition of the Thesaurus
Horizontal plane method	T 549
Horizontal planes	T 549, T 816
Hypo number	T 253
Ink jet papers	To appear in the next published edition of the Thesaurus
Interlaboratory evaluation	T 1200
Internal bond	T 833
Internet	To appear in the next published edition of the Thesaurus
Ion chromatography	To appear in the next published edition of the Thesaurus
Joint ventures	To appear in the next published edition of the Thesaurus
Kinetic friction	T 549
Lactates	T 699
Laser papers	To appear in the next published edition of the Thesaurus
Laser printing	To appear in the next published edition of the Thesaurus
Life cycle assessment	To appear in the next published edition of the Thesaurus
Litigation	To appear in the next published edition of the Thesaurus
Loss on ignition	T 618, T 658, T 665, T 1013
Machine tenders	T New (WI 3014)
Mesh residue	T 658, T 661, T 673, T 681
Metering size press coating	To appear in the next published edition of the Thesaurus
Moisture sensitivity	T 1014
Multinip calendars	To appear in the next published edition of the Thesaurus
Nanotechnology	T NEW WI 3021
Nonwovens machines	TIP 0502-16
Northern bleached softwood kraft pulps	To appear in the next published edition of the Thesaurus
Old corrugated containers	To appear in the next published edition of the Thesaurus
Oriented strand boards	To appear in the next published edition of the Thesaurus
Outliers	T 1205
Outsourcing	To appear in the next published edition of the Thesaurus
Ownership	To appear in the next published edition of the Thesaurus
Oxygen delignification	To appear in the next published edition of the Thesaurus
Paper machine components	To appear in the next published edition of the Thesaurus
Paper quality	To appear in the next published edition of the Thesaurus
Partnerships	To appear in the next published edition of the Thesaurus
Permanence	T 509, T 529
Personnel training	To appear in the next published edition of the Thesaurus
Ply separation	T 812, T 833
Potassium dichromate	T 610
Press fabric	TIP 0404-64
Price changes	To appear in the next published edition of the Thesaurus
Printing industry	To appear in the next published edition of the Thesaurus
Process water	T 620, T 631
Product quality	To appear in the next published edition of the Thesaurus
Profitability	To appear in the next published edition of the Thesaurus
Psychrometric charts	TIP 0404-45
Pulp mill equipment	TIP 0402-32
Pulp quality	To appear in the next published edition of the Thesaurus
Quercus chapmanii	To appear in the next published edition of the Thesaurus
Quercus fainea	To appear in the next published edition of the Thesaurus
Quercus geminata	To appear in the next published edition of the Thesaurus
Recovery boilers	To appear in the next published edition of the Thesaurus
Recycled content	To appear in the next published edition of the Thesaurus
Recycled paperboard	TIP 0404-47

Renewable resources	To appear in the next published edition of the Thesaurus
Repeatability	T 1200, T 1206
Residual lignin	To appear in the next published edition of the Thesaurus
Restructuring	To appear in the next published edition of the Thesaurus
Salt cake	T 619
Sanitary tissue	T New (WI 3005)
Settlement	To appear in the next published edition of the Thesaurus
Shipments	To appear in the next published edition of the Thesaurus
Shipping sack papers	T 815, TIP 0304-34
Shoe presses	To appear in the next published edition of the Thesaurus
Short span compressive strength	T 826
Silver tarnishing	T 444
Slide angle	T 815
Sodium hydrosulfide	T 622
Sodium polysulfite	T 694
Solvent holdout	T 528
Species identification	T 259
Standard solutions	T 610
Strategic alliances	To appear in the next published edition of the Thesaurus
Sulfide-free reducing compounds	T 624
Supply chain management	To appear in the next published edition of the Thesaurus
Sustainable forest management	To appear in the next published edition of the Thesaurus
Synthetic silicate pigments	T 661
Tensile energy absorption (TEA)	T 220, T 494
Terminology	T NEW WI 3021
Test conditions	T 402, T 1008
Test determinations	T 1205
Thermal spray	TIP 0402-32
Total chlorine free bleaching	To appear in the next published edition of the Thesaurus
Total indicated runout	TIP 0304-56
Total reducing compounds	T 624
Training	T New (WI 3014)
Uniformity	T 1015
Uranyl zinc acetate method	T 623
Vacuum drying	To appear in the next published edition of the Thesaurus
Visual defects	T 1015
Visual grading	T 515
Water drop tests	T 831, T 835
Water vapor transmission rate	To appear in the next published edition of the Thesaurus
Wet ash method	T 245
Wet-laid nonwovens	TIP 0502-16
Wetting tension	T 552, T 698
Williams freeness	TIP 0809-01

In addition, the following terms listed in the 1991 edition of the Thesaurus were **changed** as noted in 2003 and will appear with the change in the next edition:

Computer printout papers	*changed to*	Digital papers
Mergers	*changed to*	Mergers and acquisitions
Typewriter papers	*changed to*	Office papers

This list for this manual is accurate as of January 21, 2013. To check entries on the most recent version, contact the TAPPI Standards Administrator.

Appendix 7.

Subject Categories for TAPPI Standards

SUBJECT CATEGORIES FOR TAPPI STANDARDS AND TIPS

0100 Coating and Graphic Arts (General
0101 Basestock
0102 Coating Additives
0103 Coated Paperboard
0104 Coating Binders
0105 Coating Fundamentals
0106 Coating Pigments
0108 Printing and Imaging
0109 Specialty Coated Papers
0110 Coating Process
0114 Fillers and Pigments Testing
0116 Technical Trends
0117 Calendering

0200 Polymers, Laminations & Coatings. (General)
0201 Flexible Packaging
0205 Extrusion Coating
0206 Hot Melt
0207 High Barrier Packaging
0209 Film Extrusion
0214 Plastic Laminates

0300 Corrugated Containers (General)
0301 Safety
0302 Engineering
0303 Productivity Improvement
0304 Process Control & Quality Assurance
0305 Production
0306 Flexo Printing and Graphics
0307 Human Resource Development (Corrugated)
0308 Fiberboard Shipping Container Testing
0309 Corrugated Board Technical Service

0400 Engineering (General)
0401 Pulp & Paper Safety
0402 Corrosion & Materials Engineering
0403 Training & Performance Development
0404 Water Removal
0408 Engineering Management
0410 Fluid Mechanics
0412 Material Handling & Industrial Engineering
0416 Steam & Power/Energy Management
0418 Process Engineering
0420 Maintenance & Mechanical Engineering
0430 Process Simulation

0500 Paper & Board (General)
0502 Papermakers
0506 Papermaking Additives
0508 Stock Preparation
0509 Paper Permanence

0600 Pulp Manufacture (General)
0601 Alkaline Pulping
0602 Fiber Raw Material Supply
0603 Fiber Recycling
0605 Mechanical Pulping
0606 Pulp Bleaching
0607 Sulfite & Semichemical Pulping
0609 Nonwood Plant Fibers
0618 Wood Chemistry

0700 Research & Development (General)
0701 Forest Resources
0702 Information Management
0704 Microbiology and Microbial Technology
0708 Paper Physics
0709 Research Management

0800 Process and Product Quality (General)
0802 Chemical Properties
0804 Optical Properties
0808 Physical Properties
0809 Pulp Properties
0810 Quality Management

0900 Environmental (General)
0904 Environmental Management
0906 Water Quality
0907 Residuals Management
0908 Air Quality

1000 Finishing & Converting (General)
1004 Packaging
1005 Shipping, Receiving, & Warehousing
1006 Sheeting
1008 Winding

1100 Process Control, Electrical & Info. (General)
1101 Process Control
1102 Electrical Engineering
1103 Millwide Control and Information

1200 Nonwovens (General)
1201 Nonwovens Binders & Additives
1202 Building & Industrial Mat
1203 Nonwovens Properties and Performance
1204 Nonwovens Filtration Media
1205 Nonwovens Fibers
1207 Nonwovens Process Technology

1400 Nanotechnology

Appendix 8.

Related Methods Chart

TAPPI Standards compared to Related Standards of ISO and ASTM (revised May 2009)

NOTE: "Related" does not imply "equivalence." A "Related Standard" may be a standard for a similar property, but this should not assume identical techncial content or matching results.

Most of the ASTM methods listed here have been withdrawn, and the ASTM D06 committee has been disbanded. This list is being retained for historical purposes.

TAPPI Number	Title	ISO	ASTM
Fibrous Materials and Pulp Testing			
T 200	Laboratory Beating of Pulp (Valley Beater Method)	5264	
T 204	Solvent Extractives of Wood and Pulp	624	D 1107, D 1108
T 205	Forming Handsheets for Physical Tests of Pulp	5263, 5269/1	
T 207	Water Solubility of Wood and Pulp		D 1110
T 210	Sampling and Testing Wood Pulp Shipments for Moisture	7213, 801/1, 801/2	
T 211	Ash in Wood, Pulp, Paper, and Paperboard: Combustion at 525ºC	1762	D 1102
T 212	One Percent Sodium Hydroxide Solubility of Wood and Pulp	699	D 1109
T 213	Dirt in Pulp	5350/1, 5350/2	
T 218	Forming Handsheets for Reflectance Testing of Pulp (Büchner Funnel Procedure)	5269-1	
T 220	Physical Testing of Pulp Handsheets	5270	
T 221	Drainage Time of Pulp	5267-1, 5267-2	
T 222	Acid Insoluble Lignin in Wood and Pulp		D 1106
T 223	Pentosans in Wood and Pulp		
T 226	Specific External Surface of Pulp		
T 227	Freeness of Pulp (Canadian Standard Method)	5267/2	
T 230	Viscosity of Pulp (Capillary Viscometer Method)	5351/1	
T 231	Zero-Span Breaking Strength of Pulp (Dry Zero-Span Tensile)	15361	D 5804
T 232	Fiber Length of Pulp by Projection	16065-1, 16065-2	
T 233	Fiber Length of Pulp by Classification	16065-1, 16065-2	
T 234	Coarseness of Pulp Fibers		
T 235	Alkali Solubility of Pulp at 25ºC	692	
T 236	Kappa Number of Pulp	302	
T 237	Carboxyl Content of Pulp		D 1926
T 240	Consistency (Concentration) of Pulp Suspensions	4119	
T 244	Acid-Insoluble Ash in Wood, Pulp, Paper, and Paperboard	776	D 586
T 245	Silicates and Silica in Pulp (Wet Ash Method)		D 2438
T 248	Laboratory Beating of Pulp (PFI Mill Method)	5264/2	
T 249	Carbohydrate Composition of Extractive-Free Wood and Wood Pulp by Gas-Liquid Chromatography		D 1915
T 252	pH and Electrical Conductivity of Hot Water Extracts of Pulp, Paper, and Paperboard	6587, 6588	
T 254	Cupriethylenediamine Disperse Viscosity of Pulp (Falling Ball Method)	5351/1	
T 255	Water Soluble Sulfates in Pulp and Paper	9198	
T 256	Water Soluble Chlorides in Pulp and Paper	9197/1, 9197/2	
T 257	Sampling and Preparing Wood for Analysis		
T 258	Basic Density and Moisture Content of Pulpwood		
T 259	Species Identification of Nonwood Plant Fibers		
T 261	Fines Fraction by Weight of Paper Stock by Wet Screening	10376	
T 262	Preparation of Mechanical Pulps for Testing	5263-2, 5263-3	ISO 5263-3??
T 263	Identification of Wood Fibers from Conifers		
T 264	Preparation of Wood for Chemical Analysis		D 1105
T 265	Natural Dirt in Wood Chips		
T 266	Determination of Sodium, Calcium, Copper, Iron, and Manganese in Pulp and Paper by Atomic Absorption Spectroscopy	777, 778, 779	
T 267	Compression Wood Identification in Pulpwood		
T 268	Weight-Volume Measurement of Pulpwood		
T 271	Fiber Length of Pulp and Paper by Automated Optical Analyzer Using Polarized Light	16065-1	
T 272	Forming Handsheets for Reflectance Testing of Pulp (Sheet Machine Procedure)	3688	
T 274	Laboratory Screening of Pulp (MasterScreen-Type Instrument)		

T 275	Screening of Pulp (Somerville-Type Equipment)		
T 277	Macro Stickies Content in Pulp: the “Pickup“ Method		D 6148
T 278	Pulp Screening (Valley-Type Screening Device)		
T 280	Acetone Extractives of Wood and Pulp		D 1107, D 1108
T 281	Open Drum Washer Mat Sampling Technique		
T 282	Hexeneuronic Acid Content of Chemical Pulp		

Paper and Paperboard Testing

T 400	Sampling and Accepting a Single Lot of Paper, Paperboard, Fiberboard, or Related Product	186	D 585
T 401	Fiber Analysis of Paper and Paperboard	9184 (5 parts)	D 1030
T 402	Standard Conditioning and Testing Atmospheres for Paper, Board, Pulp Handsheets, and Related Products	187	D 685
T 403	Bursting Strength of Paper	2758	D 774
T 404	Tensile Breaking Strength and Elongation of Paper and Paperboard (Using Pendulum Type Tester)	1924/1	
T 405	Petroleum Wax in Impregnated Papers		D 590
T 406	Reducible Sulfur in Paper and Paperboard		D 984
T 408	Rosin in Paper and Paperboard		
T 409	Machine Direction of Paper and Paperboard		D 528
T 410	Grammage of Paper and Paperboard (Weight Per Unit Area)	536	D 646
T 411	Thickness (Caliper) of Paper, Paperboard, and Combined Board	534, 3034	D 645
T 412	Moisture in Paper and Paperboard	287	D 644
T 413	Ash in Wood, Pulp, Paper and Paperboard: Combustion at 900ºC	2144	D 586
T 414	Internal Tearing Resistance of Paper (Elmendorf Type Method)	1974	D 689
T 418	Organic Nitrogen in Paper and Paperboard		
T 419	Starch in Paper		D 591
T 423	Folding Endurance of Paper (Schopper Type Tester)	5626	D 643
T 425	Opacity of Paper (15/d geometry, Illuminant A/2º, 89% Reflectance Backing and Paper Backing)	2471	D 589
T 428	Hot Water Extractable Acidity or Alkalinity of Paper		D 548
T 429	Alpha-Cellulose in Paper		D 588
T 430	Copper Number of Pulp, Paper, and Paperboard		D 919
T 431	Ink Absorbency of Blotting Paper		D 2177
T 432	Water Absorbency of Bibulous Papers		D 824
T 433	Water Resistance of Sized Paper and Paperboard (Dry Indicator Method)		D 779
T 434	Acid-Soluble Iron in Paper	779	
T 435	Hydrogen Ion Concentration (pH) of Paper Extracts (Hot Extraction Method)	6588	D 778
T 437	Dirt in Paper and Paperboard		D 2019
T 438	Zinc and Cadmium in Paper		D 1224
T 441	Water Absorptiveness of Sized (Non-bibulous) Paper, Paperboard, and Corrugated Fiberboard (Cobb Test)	535	D 3285
T 444	Silver Tarnishing by Paper and Paperboard		D 2043
T 448	Water Vapor Transmission Rate of Paper and Paperboard at 23ºC and 50% RH	2528	E 96, E 398
T 449	Bacteriological Examination of Paper and Paperboard	8784/1	
T 452	Brightness of Pulp, Paper, and Paperboard (Directional Reflectance at 457 nm)	2469,2470	D 985
T 453	Effect of Dry Heat on Properties of Paper and Board	5630/1	D 776
T 454	Turpentine Test for Voids in Glassine and Greaseproof Papers	5634	
T 455	Identification of Wire Side of Paper		D 5039
T 456	Wet Tensile Breaking Strength of Paper and Paperboard (“Wet Tensile Strength”)		D 829
T 458	Surface Wettability of Paper (Angle of Contact Method)		D 724
T 459	Surface Strength of Paper (Wax Pick Test)		D 2482
T 460	Air Resistance of Paper (Gurley Method)	5636-5	D 726
T 461	Flame Resistance of Treated Paper and Paperboard		D 777
T 462	Castor Oil Penetration Test for Paper		D 780
T 464	Water Vapor Transmission Rate of Paper and Paperboard at High Temperature and Humidity	2528	E 96, E 398
T 465	Static Creasing of Paper for Water Vapor Transmission Tests	2528	
T 476	Abrasion Loss of Paper and Paperboard (Taber-Type Method)		
T 479	Smoothness of Paper (Bekk Method)	5627	
T 480	Specular Gloss of Paper and Paperboard at 75□	8254-1	D 1223
T 483	Odor of Packaging Materials		

T 487	Fungus Resistance of Paper and Paperboard		D 2020
T 489	Bending Resistance (Stiffness) of Paper and Paperboard (Taber-type Tester in Basic Configuration)	2493	D 5342
T 491	Water Immersion Test of Paperboard	5637	
T 493	Identification and Determination of Melamine Resin in Paper		D 1597
T 494	Tensile Properties of Paper and Paperboard (Using Constant Rate of Elongation Apparatus)	1924/2	D 828
T 496	Specimen Preparation for Cross Directional Internal Tearing Resistance for Paper, Paperboard and Related Materials		
T 500	Book Bulk and Bulking Number of Paper		D 2175
T 502	Equilibrium Relative Humidity of Paper and Paperboard		
T 504	Glue in Paper (Qualitative and Quantitative Determination)		
T 507	Grease Resistance of Flexible Packaging Materials	5634	F 119
T 509	Hydrogen Ion Concentration (pH) of Paper Extracts (Cold Extraction Method)	6588	D 778
T 511	Folding Endurance of Paper (MIT Tester)	5626	D 2176
T 512	Creasing of Flexible Packaging Material Paper Specimens for Testing		F119
T 515	Visual Grading and Color Matching of Paper		D1729
T 516	Envelope Seal, Seam, and Window Patch Testing		
T 519	Diffuse Opacity of Paper (d/0 paper backing)	2471	
T 520	Curl of Gummed Flat Papers		
T 523	Dynamic Measurement of Water Vapor Transfer Through Sheet Materials		E 96, F 372
T 524	Color of paper and paperboard (45/0, C/2)		
T 525	Diffuse Brightness of Pulp (d/0)	2469, 3688	
T 526	Blister Resistance of Coated Paper in Heatset Printing		
T 527	Color of paper and paperboard (d/0, C/2)		
T 529	Surface pH Measurement of Paper		
T 530	Size Test for Paper by Ink Resistance (Hercules-Type Method)		
T 531	Starch Consumption in Corrugated Board (Enzymatic/Gravimetric Method)		
T 532	Starch Consumption in Corrugated Board (Enzymatic/Colorimetric Method)		
T 534	Brightness of Clay and Other Mineral Pigments (d/0)		
T 536	Resistance of Paper to Passage of Air (High Pressure Gurley Method)		D 726
T 537	Dirt Count in Paper and Paperboard (Optical Character Recognition – OCR)		
T 538	Smoothness of Paper and Paperboard (Sheffield Method)	8791/3	
T 541	Internal Bond Strength of Paperboard (Z-Direction Tensile)		
T 543	Bending Resistance of Paper (Gurley-Type Tester)	5628	D 6125
T 544	Effect of Moist Heat on Properties of Paper and Board	5630/3	D 4714
T 545	Cross-Machine Grammage Profile Measurement (Gravimetric Method)		
T 546	Machine Direction Grammage Variation Measurement (Gravimetric Method)		
T 547	Air Permeance of Paper and Paperboard (Sheffield Method)	5636-4	
T 549	Coefficients of Static and Kinetic Friction of Uncoated Writing and Printing Paper by Use of the Horizontal Plane Method	15359	D 4917
T 550	Determination of Equilibrium Moisture in Pulp, Paper and Paperboard for Chemical Analysis	287	D 644
T 551	Thickness of Paper and Paperboard (Soft Platen Method)	534	D 645
T 552	Determination of Wetting Tension of Polymeric Films and Coated Surfaces via the Mayer Rod Technique		
T 553	Alkalinity of Paper as Calcium Carbonate (Alkaline Reserve of Paper)		D 4988
T 555	Roughness of Paper and Paperboard (Print-Surf Method)	8791/4	
T 556	Bending Resistance of Paper and Paperboard (Lorentzen & Wettre Type Tester)	2493	
T 558	Surface Wettability and Absorbency of Sheeted Materials Using an Automated Contact Angle Tester		D 724
T 559	Grease Resistance Test for Paper and Paperboard		D 722
T 560	CIE Whiteness and Tint of Paper and Paperboard (Using d/0, Diffuse Illumination and Normal Viewing)		E 313
T 562	CIE Whiteness and Tint of Paper and Paperboard (Using 45/0 Directional Illumination and Normal Viewing)		E 313
T 563	Equivalent Black Area (EBA) and Count of Visible Dirt in Pulp, Paper and Paperboard by Image Analysis		D 6101
T 564	Transparent Chart for the Estimation of Defect Size	5350/3	

T 566	Bending Resistance (Stiffness) of Paper (Taber-type Tester in 0 to 10 Taber Stiffness Unit Configuration)	2493	D 5650
T 567	Determination of Effective Residual Ink Concentration (ERIC) by Infrared Reflectance Measurement	22754	D 1193
T 568	Physical Area of Sub-Visible Contraries in Pulp, Paper and Paperboard by Image Analysis		
T 569	Internal Bond Strength (Scott Type)		
T 570	Resistance to Mechanical Penetration of Sanitary Tissue Paper (Ball Burst Procedure)		D 6548
T 571	Diffuse Brightness of Paper and Paperboard (d/0) (T 571 withdrawn in 2006)	2469, 2470	
T 572	Accelerated Pollutant Aging of Printing and Writing Paper by Pollution Chamber Exposure Apparatus		D 6833
T 573	Accelerated Temperature Aging of Printing and Writing Paper by Dry Oven Exposure Apparatus		D 6819
T 574	Wax in Pulp, Paper and Paperboard		D 590
T 575	Roughness of Paper and Paperboard, Stylus (Emveco-Type) Method		
T 576	Tensile Properties of Towel and Tissue Products (Using Constant Rate of Elongation Apparatus)	12625-4	
T 577	Score Bend Test		

Nonfibrous Materials Testing

T 600	Analysis of Formaldehyde in Aqueous Solutions of Free Formaldehyde in Resins		D 2194
T 602	Analysis of Sulfuric Acid		E 223
T 604	Sulfur Dioxide in Sulfite Cooking Liquor		
T 605	Reducing a Gross Sample of Granular or Aggregate Material to Testing Size		C 702
T 607	Analysis of Casein		D 4689
T 610	Preparation of Indicators and Standard Solutions		E 200
T 611	Analysis of Bleaching Powder, Calcium Hypochlorite Bleach Liquor and Bleach Sludge		
T 613	Analysis of Caustic Soda		E 291
T 617	Analysis of Lime		C 25
T 618	Analysis of Limestone		C 25
T 619	Analysis of Salt Cake		
T 621	Analysis of Rosin		
T 622	Analysis of Sodium Hydrosulfite		
T 624	Analysis of Soda and Sulfate White and Green Liquors		
T 627	Determination of Titanium Dioxide		
T 628	Analysis of Rosin Size		
T 631	Microbiological Enumeration of Process Water and Slush Pulp		
T 632	Analysis of Sodium Silicate		
T 646	Brightness of Clay and Other Mineral Pigments (45/0)		
T 648	Viscosity of Coating Clay Slurry		
T 650	Solids Content of Black Liquor		
T 653	Specular Gloss of Paper and Paperboard at 20º		D 523
T 656	Measuring, Sampling, and Analyzing White Waters		
T 657	Sampling of Fillers and Pigments		C 322
T 665	Analysis of Talc		D 717
T 676	Viscosity of Starch and Starch Products		
T 684	Gross Heating Value of Black Liquor		D 2015
T 692	Determination of Suspended Solids in Kraft Green and White Liquor		
T 697	Accelerated Test for Viscosity Stability of Clay Slurries		
T 698	Determination of Wetting Tension of Polyethylene and Polypropylene Films and Coatings (Modified Visking Analytical Technique)		D 2578
T 699	Analysis of Pulping Liquors by Suppressed Ion Chromatography		
T 702	Rheological Measurements for Characterization of Polyolefins: Low-Density Polyethylene (LDPE) for Extrusion Coating		

Container Testing

T 800	Drum Test for Fiberboard Shipping Containers (Revolving Hexagonal Drum)		D 782 (wd?)
T 801	Impact Resistance of Fiberboard Shipping Containers		D 880 (wd?)
T 802	Drop Test for Fiberboard Shipping Containers		D 5276 (wd?)
T 803	Puncture Test of Container Board	3036	

T 804	Compression Test of Fiberboard Shipping Containers		D 642 (wd?)
T 807	Bursting Strength of Paperboard and Linerboard	2759	
T 808	Flat Crush Test of Corrugated Board (Flexible Beam Method)	3035	
T 809	Flat Crush of Corrugated Medium (CMT Test)	7263	
T 810	Bursting Strength of Corrugated and Solid Fiberboard	2759	
T 811	Edgewise Compressive Strength of Corrugated Fiberboard (Short Column Test)	3037	
T 812	Ply Separation of Solid and Corrugated Fiberboard (Wet)		
T 813	Tensile Test for the Manufacturer's Joint of Fiberboard Shipping Containers		
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T 818	Ring Crush of Paperboard	12192	D 1164 (wd?)
T 819	Water Absorption of Corrugating Medium: Boat Method		
T 820	Flexural Stiffness of Corrugated Board		
T 821	Pin Adhesion of Corrugated Board by Selective Separation		
T 822	Ring Crush of Paperboard (Rigid Support Method)	12192	
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T 825	Flat Crush Test of Corrugated Board (Rigid Support Method)	3035	
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T 829	Score Quality Test		
T 830	Ink Rub Test of Container board		
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T 832	Water Absorption of Corrugating Medium: Float Curl Method		
T 834	Determination of Paperboard Roll Hardness		
T 835	Water Absorption of Corrugating Medium: Water Drop Absorption Test		
T 836	Bending Stiffness, Four Point Method		
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T 843	Fluted Edge Crush of Corrugating Medium (Rigid Support Method)		

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T 1002	Drainage Time of Pulp for Insulating Board		
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T 1007	Sample Location for Fiber Glass Mat Sheets		
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T 1215	The Determination of Instrumental Color Differences		
T 1216	Indices for Whiteness, Yellowness, Brightness, and Luminous Reflectance Factor		

T 1217 Photometric Linearity of Optical Properties Instruments
T 1218 Calibration of Reflectance Standards for Hemispherical Geometry
T 1219 Storage of Paper Samples for Optical Measurements and Color Matching

Specifications, Glossaries, and Guidelines

T 1500 Optical Measurements Terminology
(Related toAppearance Evaluation of Paper)

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References are to complete sections, specific paragraphs, and Appendixes