

The information and data contained in this document were prepared by a technical working group of the Association. The working group and the Association assume no liability or responsibility in connection with the use of such information or data, including but not limited to any liability under patent, copyright, or trade secret laws. The user is responsible for determining that this document is the most recent edition published.

PLEASE NOTE: A TAPPI Useful Method (UM) is 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. A UM is written with no less attention to proper use of the language to describe the procedure using essentially the same elements of a TAPPI Standard Test Method, but in a less rigorous manner. TAPPI Useful Methods do not receive the same review through a rigorous process of openness, voluntary review, and consensus as do the TAPPI Standard Test Methods, and as such, are not intended to be used as referee methods as the TAPPI Standard Test Methods are.

CAUTION:

This 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.

Dirt in pulp (measured by transmitted light)

Scope

This method supplements TAPPI T 213 “Dirt in Pulp,” which measures dirt in mm^2/m^2 (parts per million) as detected by reflected light by measuring dirt in actual dirt specks (above a given threshold value) as observed by transmitted light. This method is most often used on slush pulps, whereas T 213 is more often used on dry sheets. Either method, however, may be used with either type of pulp.

Safety precautions

There are no specific safety precautions for this method.

Definition

By definition, dirt is an extraneous matter in pulp, of such size, shape, color, or texture that it is readily visible when the pulp is inspected with the naked eye. Under this definition, therefore, pulp fibers themselves, if they differ in color, size, or texture from the main body of the pulp (e.g., shives, unbleached fibers in a bleached pulp, etc., are considered as dirt).

Approved by a Working Group of TAPPI in accordance with the Useful Method Guidelines

Apparatus

1. *Pulp disintegrator*, as described in TAPPI T 205 “Forming Handsheets for Physical Tests of Pulp,” or any other comparable piece of equipment. This equipment is not needed for testing slush pulps, but is needed for dry or sheet pulps.
2. *Viewing box*. Approximately 220 x 280 mm (8.5 x 11 in.) with a 22-W circular (circline) fluorescent tube under frosted glass, to give 4300 ± 540 lx of “cool white” at the surface of the box.
3. *Hydraulic press*, as described in T 205, or equivalent.
4. *Büchner funnel*, 150 mm I.D., filter flask, a source of vacuum, and a supply of 150-mm and 180 or 185-mm rapid draining qualitative filter papers.
5. *TAPPI Dirt Chart*, as described in TAPPI T 213, or a special chart showing only the 0.040-mm² size.

Sampling and test specimen

Obtain a sample of the pulp in accordance with a previously determined sampling plan. Care must be taken that additional dirt is not added in the sampling and handling. The test specimen used for the test is only 3 to 6 g in weight; however, a much larger sample ordinarily is taken and should be well mixed prior to the subsequent dilution. Prepare several liters of diluted stock with distilled water at approximately 0.3% consistency, i.e., 3 g per 1000 mL.

If dry, shredded pulp or sheet pulp is being tested, the sample must first be soaked for several hours in distilled water, a shorter time if the water is heated. The soaked pulp then is defibered in the disintegrator or blender, after which several liters are prepared at 0.3% consistency, similar to the procedure with slush pulp.

Procedure

1. Prepare two to four handsheet specimens from each pulp, each specimen shall contain 1.5 g in weight of moisture-free pulp diluted to approximately 500 mL (about 0.3% pulp) for each sheet. Form these sheets on the Büchner funnel, on a 150-mm filter paper. Be sure the filter funnel is level before pouring the stock so the sheet will be uniform in thickness. Suck the sheet dry, then blow it onto a 185-mm filter paper. Each sheet until then will consist of the handsheet sandwiched between a 150- and 185-mm filter paper. Place each unit on two standard 20 × 20 cm (8 × 8 in.) pulp testing blotters and place two more blotters on top. These units of pulp sheet, filter papers, and blotters may be stacked to any convenient height.
2. Place the above stack in the hydraulic press and press for 1 min at 1241 kPa (180 psig).

NOTE 1: If other than a TAPPI press is used, calculate the gauge pressure equivalent to 1241 kPa (180 psi) on the TAPPI press.

3. Place the sheets, one at a time, on the viewing box and inspect carefully. Count and circle each dirt speck of over 0.04 mm² in area using the dirt comparison chart for reference. Turn the sheet over and count any specks which may have been missed in the first count. Unlike T 213, however, where dirt is counted twice if it appears on both sides of the sheet, do not count any specks twice.

Report

Report dirt count as the total number of dirt specks of over 0.04 mm² size per gram of moisture-free pulp. Thus, if four sheets were counted, the total specks counted were 47, and the gross weight of the four sheets was 6.25 g, the dirt count reported will be 47 / 6.25, or 7.5. Report to the nearest 0.1 unit.

Precision

Tests using this procedure may vary as much as 50% from each other.