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WORKING GROUP
CHAIR _____ To Be Determined _____

SUBJECT
CATEGORY _____ Process and Product Quality _____

RELATED
METHODS _____ See "Additional Information" _____

CAUTION:

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 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.

Transparent Chart for the Estimation of Defect Size (Five-year review of Standard Practice T 564 sp-21)

1. Introduction

There are many applications where it is desired to measure the size of spots, defects or inclusions in paper and other industrial materials such as textiles or plastics. This chart was developed from the "TAPPI Dirt Estimation Chart" to provide a means for size estimation.

2. Scope

2.1 The transparent chart developed for this method may be used to estimate the size (area) of spots, defects, and/or other inclusions over the range of 0.02 to 5.00 mm². The measurements provided on the chart correspond to the dots only. Rectangles on the chart can be used for visual comparison, however they are not measured.

2.2 The chart may be used in a large number of applications where there is a need to estimate a size (area) by way of a direct comparison to a known area disk or rectangle. Applications may include, but are not limited to, the measurement of visible ink spatter on printed surfaces, the estimation of the growth rate of bio-colonies, air inclusions in transparent plastic castings and films, etc.

2.3 The chart **must not** be used to estimate the equivalent black area (EBA) of dirt or other colored specks.

Dirt measurements by the EBA method should be performed in accordance with TAPPI T 437 "Dirt in Paper and Paperboard," TAPPI T 213 "Dirt in Pulp," or TAPPI T 563 "Equivalent Black Area (EBA) and Count of Visible Dirt in Pulp, Paper, and Paperboard by Image Analysis." Do not use this chart for T 437, T 213, or T 563.

3. Significance

3.1 This method is to be used to estimate the size (area) of defects through direct comparison to a transparent chart with a series of known disk or rectangular areas.

3.2 This method is applicable to spots, defects, and/or areas where they can be approximated by known areas.

4. Apparatus

4.1 *Size estimation chart*, a transparency, approximately 9 by 14 cm of a series of round black dots of various areas and rectangles exposed on to a sheet of transparent film.

4.2 The layout of the chart is shown in Figure 1.

4.3 For high precision work, the dot and rectangle areas should be measured microscopically and area correction factors should be developed.

5. Procedure

5.1 Ensure that hands and work areas are clean and dust-free before handling the size estimation chart and the specimens to be examined.

5.2 Place the chart on, or as close as possible to, the defect to be measured. Slide the chart about the spot to be measured until a dot or rectangle on the chart is found that most closely matches the size of the defect. Record the area value of the defect from the chart value. If the defect falls between the standard marks, an estimated area can be recorded.

6. Report

6.1 Report the number and size of the defects measured for each specimen evaluated.

6.2 For sheet materials, the defects can be reported as the total defect area per unit area of material measured. This value can be normalized as square millimeters of total defect area per square meter of surface area examined (parts per million).

7. Precision

No determination of repeatability and reproducibility has been made due to the diverse and non-specified uses for the Size Estimation Chart. Precision data may be established by the user for a particular application using TAPPI Test Method T 1200 "Interlaboratory evaluation of test methods to determine TAPPI repeatability and reproducibility."

