AUSTRALIAN STANDARD
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MEASUREMENT OF DIFFUSE REFLECTANCE FACTOR

The measurement of diffuse reflectance factor is a procedure which forms the basis of a number of optical test methods (Reference 6.1). This Standard specifies the equipment and describes the general procedure for measuring diffuse reflectance factor as required for the evaluation of the physical correlates of specific appearance properties of pulp, paper and paperboard. Diffuse reflectance factor (R) is the ratio, expressed as a percentage, of the radiant (luminous) flux reflected by a body within a specified cone, to that reflected by the perfect reflecting diffuser under the same conditions of viewing and diffuse illumination.

Measurements of diffuse reflectance factor need to be made to a high degree of accuracy and it is necessary therefore that the reflectance of the calibrating standards are known to the same accuracy. To this end the International Organization for Standardization has set up the following reference standards:

(a) ISO Reference Standard of Level 1 (IR 1)—The perfect reflecting diffuser, CIE 45-20-195 (Reference 6.2). This is an ideal uniform diffuser with a reflectance equal to 1.

(b) ISO Reference Standards of Level 2 (IR 2)—Standards whose diffuse reflectance factor has been determined by an ISO Standardizing Laboratory in relation to the IR 1. These Standards are used by Authorized Laboratories to calibrate the instruments they use for assigning values to IR 3s.

(c) ISO Reference Standards of Level 3 (IR 3)—Standards measured by an ISO Authorized Laboratory against an IR 2. These Standards are intended to be used by working laboratories for calibration of their instruments. The requirements of these Standards are given in Appendix B.

Laboratories listed by ISO as being competent to issue IR 2 Standards are known as Standardizing Laboratories. Laboratories listed as competent to issue IR 3 Standards are known as Authorized Laboratories. Lists of such laboratories are available from ISO Central Secretariat, Standards Australia, Standards Association of New Zealand and Appita.

1. APPARATUS

1.1 Reflectometer having the photometric and geometric characteristics described in Appendix A. The spectral characteristics of the instrument depend on the property being measured and are prescribed by the Standard to be used for each property.

1.2 Working standards comprising a zero (black) standard and one or more opal glass (or similar material) standards which may be internal or external to the reflectometer. The standards, except for the zero (black) standard, must be calibrated against ISO IR 2 or 3 Standards as prescribed in Section 2 and should provide levels appropriate for the samples and properties being measured.

1.3 ISO Reference Standards of Level 2 or 3 (IR 2 or IR 3) of levels appropriate to the properties and samples to be measured.

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