

Committee Activity Report
19 May, 1998
CIE TC 2—39
Geometric Tolerances for Color Measurement

Terms of Reference

Compile a technical report and recommendations specifying the geometric tolerances for the various geometries in colorimetry, including 0/45, 0/d and others. Parts of this technical report may be suitable for inclusion in a CIE standard specifying several geometric tolerance levels.

Working Program

Utilize ISO 5/1 and ASTM E 1767 to develop a system of specifications for the geometry of color measurements. Define the specifications in the following order: Reflectance factor (t/8, d/8, d/0), radiance factor (45/0) and transmittance geometries (0/0, d/0). Specifications will be developed via computer simulation & verified experimentally.

Current Committee Membership:

A Bittar (New Zealand), J. Verrill (United Kingdom), L. Hanssen (USA), G. Baba (Japan), B. Jordon (Canada), J. Zwinkels (Canada), H. Terstiege (Germany), N. Johnson (USA), D. Rich (USA), Chairman, R. Fisch (USA), J. Pietrzykowski (Poland), A. Kravetz (USA), J. Ladson (USA), J. Decarreau (France)
Consulting Member. W. Erb (Germany)

Status

The Committee met for the fourth time just prior to the CIE Division 2 meeting in Boulder, Colorado USA at the NIST. Four committee members and six guests were present. Discussions during the meeting resulted in the following actions:

1. There was a general agreement that the use of the terminology "bidirectional" should be reserved for instruments with nearly parallel rays and multiple angles of illumination or view. The normal 45/0 instrument has biconical beams and the committee recommends that the change in notation be communicated to Michael Pointer, editor of Publication 17.3.
2. Comments from guest C. McCamy indicated that the current CIE tolerances are tolerancing the wrong information. Based on publications from the NPL, the tolerances for 45/0 will result in maximum color differences of 3.0 CIELAB units. Tightening the tolerances will result in improvements in the color differences but tolerancing the uniformity of the illumination and viewing cones will result in a greater improvement.
3. ASTM standard 1763 recommends the use of a very small sampling aperture to verify the uniformity of the specimen port. It was recommended by the committee that the committee report include recommendations for using a sampling aperture of physical and angular size (1/20) of the specimen aperture.

The committee will also try to include a recommendation for a material standard for testing the uniformity of hemispherical geometry.

4. C McCamy requested that the report make a clear distinction between the surface reflectance and the specular reflectance.

During the next few months, the chairman will prepare a draft of the final report and distribute the draft to committee members for comment. NIST and 3M have volunteered to supply some measurement data on standard materials to verify the effect of tightening the tolerances.

Danny Rich

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