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Methods for Re-defining CIE D Illuminants

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This Technical Report gives an overview of the construction of the tables describing CIE D illuminants, and proposes two methods to smooth the daylight illuminant spectral power distributions. The first method keeps the values originally determined at the integer 10 nm intervals unchanged and interpolates between these fixed points to get smooth (twice differentiable) curves (minimal smoothing method). A second alternative method smoothes more strongly, cutting fine structure maxima and minima of the spectrum (highly smoothing method).

Examples show the consequences of both methods, pointing out that smoothing has little influence on colorimetric accuracy.

The Technical Committee recommends testing the provided tables based on the two smoothing algorithms in practice and to urge users to test data of Table 4 which are based on the highly smoothing method, and ask instrument constructors to test the method for building D illuminant simulators with the eventual outcome of defining a CIE D50 and D65 standard source.

The publication provides a link to two Excel files: one for calculation of the SPD of a daylight illuminant for the different interpolation methods described in this report after input of a required CCT and another one providing the tables of the report.

The publication is written in English, with a short summary in French and German. It consists of 75 pages with 13 figures and 5 tables and is readily available at the National Committees of the CIE or via the CIE Webshop.

The following members of TC 1-74 "Methods for Re-defining CIE D Illuminants" took part in the preparation of this Technical Report. The committee comes under Division 1 "Vision and Colour".

Members

- Schanda, J. Hungary (Chair)
- Fairman, H. USA
- Hirschler, R. Hungary
- Kosztyán, Z. Hungary
- Kránicz, B. Hungary
- Li, C. China
- Ohno, Y. USA
- Rich, D. USA

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