

Normalisation and Interpolation Processing

1. Difference between \ORG files and \INT files

The data stored in \ORG folder, which are only the results of spectral reflectance measurement, comprise outputs from sixteen spectral measurement devices. Though all the devices were highly reputable, they output slightly different data, when measuring certain. In addition, their wavelength ranges or sampling intervals for measurement do not always coincide. These factors make it inconvenient to compare the data across the object categories.

The database also stores other data whose reflectances are normalised to standard data and whose wavelength range and sampling interval are unified by interpolation. The data stored in \INT folder are that after such processing has been done.

The normalisation and interpolation processing was not applied to the data stored in \KRINOV folder. The processing applied to them is explained in Section 4 in detail.

2. Normalisation processing

\ORG\CALIB folder stores spectral reflectances for eight calibration colour patches, measured by sixteen spectral measurement devices that were used for database creation. From the data for calibration, a part of the 'white' patch reflectance was used for normalisation. The reflectance is almost flat between 500nm and 700nm. Therefore, average reflectance in that wavelength region was calculated for each device '01'~'16' and a ratio of that reflectance to that for the standard device '00' was obtained. The ratio is used as a normalisation factor k . k for sixteen devices were obtained as shown in Table 1. Normalisation results d_{int} were obtained applying the factor k for the device used to all data d_{org} in \ORG folder as equation 1.

$$d_{\text{int}} = k \cdot d_{\text{org}} \quad (1)$$

Measurement device	k
01	0,9929
02	0,9924
03	1,0305
04	1,0450

Table 1 Normalisation factors,

05	1,0372
06	1,0004
07	1,0123
08	1,0005
09	1,0051
10	1,0014
11	1,0191

12	1,0140
13	0,9856
14	1,0209
15	1,0249
16	1,0197