Guide to Measurement Method and Calibration Curves

KURABO's thickness meters are instruments that measure (calculate) thickness based on the amount of infrared absorption. Some materials absorb infrared rays, and the amount of absorption varies depending on the material.

Figure 1 shows the amount of infrared rays absorbed (spectrum) by films of three different thicknesses. As shown in this figure, the thicker the film becomes, the more infrared rays it absorbs.

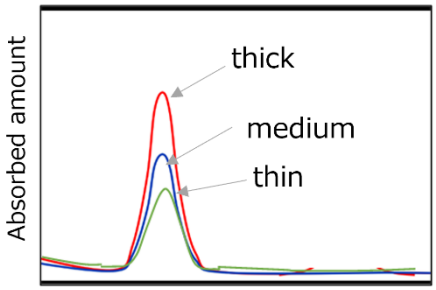

Figure 1 : IR absorption

We measure the amount of absorption as "absorbance". The formula used to convert absorbance to thickness is called "a calibration curve". It has been proven that absorbance and thickness have a proportional relationship, as shown in Figure 2 (Refer to Lambert=Beer's law).

A calibration curve is necessary to display absorbance as thickness. To create a calibration curve, prepare multiple samples with different coating thicknesses and measure the absorbance of each. As shown in Figure 2, a calibration curve is made by taking thickness on the Y (vertical) axis and absorbance on the X (horizontal) axis. Although a calibration curve must be created for each sample, once registered, measurements can be done simply by selecting the calibration curve number and measuring absorbance.

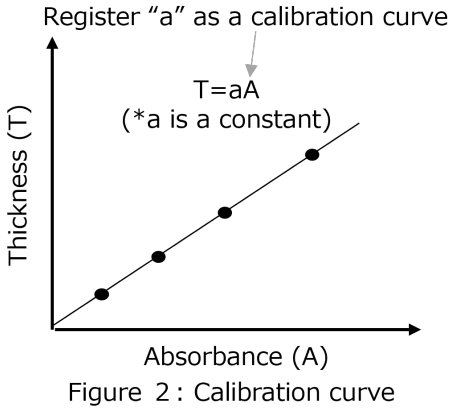

Figure 2 : Calibration curve

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