

## 4027 Determination for Thermal Tensile Ratio of Pharmaceutical Sheets

This method is used to determine thermal tensile ratio of various types of pharmaceutical sheets.

Thermal tensile ratio is the dimensional change of the sample after experiencing a certain environmental temperature in a certain period. It is expressed as a percentage of the ratio of the change in distance between punctuation points to the initial distance.

### Instruments

Heating device, oven or environmental testing chamber with the temperature accuracy of  $\pm 2^\circ$ .

Measuring ruler, with the measuring accuracy of at least  $\pm 0.2\text{mm}$ .

### Determination

Samples shall be conditioned for a minimum of 4 hours in the atmosphere of  $23^\circ \pm 2^\circ$ , relative humidity  $50\% \pm 5\%$  before test.

Two square test samples shall be prepared with the side length  $120\text{mm} \pm 1\text{mm}$  along the longitudinal direction (Fig.1). Mark the longitudinal direction and the transverse direction two lines AB, CD mutually perpendicular through the center point, each of the line length is  $100\text{mm} \pm 1\text{mm}$ . Carve marks at the ends of the two lines. After measuring the line lengths on each test sample accurately, take the arithmetic mean value ( $L_1$ ) of line AB and CD separately.

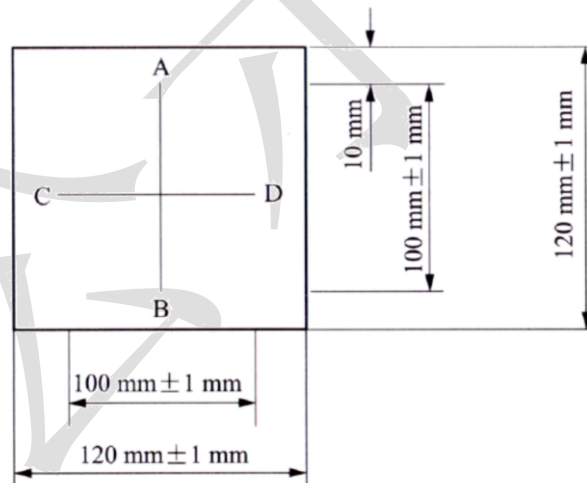


Fig. 1 Specimen dimensions

Lay the test samples flat on glass or metal plates so that the free form shall not be influenced. Place them into the heating device with the temperature of  $100^\circ \pm 1^\circ$  horizontally, hold a period of 10 minutes. Take them out, cool and condition them for at least 30 minutes in the same atmosphere as used to condition the sample. Measure the line lengths on each specimen again, take the arithmetic mean value ( $L_2$ ) of line AB and CD separately.

### Result representation

Calculate thermal tensile ratio ( $S$ ) according to the following equation:

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$$S = \frac{L_2 - L_1}{L_1} \times 100\%$$

31 Where  $S$  is the thermal tensile ratio, %;

32  $L_1$  is the arithmetic mean value of AB or CD before heating, mm;

33  $L_2$  is the arithmetic mean value of AB or CD after heating, mm.

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