

B. GENERAL TESTS

Optical Specific Rotation

Angular rotation is the angle through which the plane of polarization is rotated through a layer of an optically active substance or its solution and is measured with a polarimeter. The character of the rotation is indicated as dextrorotatory or levorotatory depending on whether the plane of the polarization is rotated to the right (dextrorotatory) or to the left (levorotatory), when facing the direction of the beam, by placing a plus sign (+) or a minus sign (-) before the number indicating the degrees of rotation and " ° " at its upper right.

The angular rotation is the value obtained when measured with specific monochromatic light λ (described in terms of the wavelength or the name) at temperature t . When the words "angular rotation" is only written, unless otherwise specified, it indicates angular rotation, $^{20}_D$, meaning that it is measured at 20 °, using a polarimeter tube of 100 mm in length and the D line of the sodium spectrum as the light source.

The specific rotation is represented by the formula

$$[\alpha]_{\lambda}^t = \frac{100}{lc},$$

- where
- t = the temperature of measurement,
 - λ = the wavelength or the name of the specific monochromatic light of spectrum used (when D line is used, indicate as D),
 - α = the angle, in degrees, of the rotation of plane of the polarized light,
 - l = the thickness of the layer of the measured solution, i.e., the length of the polarimeter tube (mm),
 - c = the number of grams of a sample in 1 ml of the solution.

Hereinafter in the Monographs, such a specification as "[α] $^{20}_D$ = +20.5 - +21.5 ° (1 g, freshly boiled and cooled water, 10 ml, on the dried basis)" indicates that the specific rotation of the substance is +20.5 - +21.5 °, when determined on the dried basis for the solution which is prepared by weighing accurately about 1 g of the test substance and dissolving in newly boiled and cooled water to make exactly 10 ml.