

To begin the ASTM D1925 is a now obsolete Yellowness Index specification that is locked to calculate only using C/2 (illuminant C, 2deg observer). When using ASTM D1925 the coefficients for Cx and Cy were 1.28 and 1.06, this goes back to the slide rule days of the 1940's, when a colorimeter user would have to calculate YI using pencil and paper. These coefficients do not cause the equation to intercept exactly at zero for a perfectly clear specimen and instead give a value of 0.303.

ASTM E313 can be used to calculate Whiteness Index (WI) or Yellowness Index (YI) for C/2, C/10, D65/2, D65/10. If you specify ASTM E313 you must also specify YI or WI and an illuminant Observer combination.

Note that Yellowness Index is often used in the plastics industry to indicate that a clear plastic has no tint. In E313 C/2 the Cx and Cy were modified to 1.2769 and 1.0592, the extra precision fixed the intercept error so that a perfectly clear sample reports a YI= 0.0. So basically there is no bias between ASTM D1925 and E313 C/2 for your specification as long as there is some type of color to the sample.

The CIE (international commission on illumination) suggests that unless specifically instructed otherwise, always choose D65/10 for color comparisons and indices. This would imply that one should use YI E313 (D65/10) unless there is an need to use a difference illuminant.

Because the difference in the Cx and Cy is so small for C/2 there is almost no difference between the indices when the sample has a large amount of yellow, as can be seen in the example below. Using D65/10 will cause differences.

ID YI D1925 [C/2] YI E313 [C/2] YI E313 [D65/10]

PIF090-84 17.18 17.18 17.66

Let me know if you have further questions.