Figure 1.8 shows a section of the CIE 1931 chromaticity diagram with the Planckian locus shown. The locus is the curved line joining the chromaticity coordinates of black bodies at different temperatures. The lines running across the Planckian locus are iso-temperature lines. When the CIE 1931 chromaticity coordinates of a light source lie directly on the Planckian locus, the colour appearance of that light source is expressed by the colour temperature, i.e. the temperature of the black body that has the same chromaticity coordinates. For light sources that have chromaticity coordinates close to the Planckian locus but not on it, their colour appearance is quantified as the correlated colour temperature, i.e. the temperature of the iso-temperature line that is closest to the actual chromaticity coordinates of the light source. The temperatures are usually given in kelvins (K).

As a rough guide, nominally-white light sources have correlated colour temperatures ranging from 2,700 K to 7,500 K. A 2,700 K light source, such as an incandescent lamp, will have a yellowish colour appearance and be described as 'warm', while a 7,500 K lamp, such as some types of fluorescent lamp, will have a bluish appearance and be described as 'cold'. It is important to appreciate that light sources that have chromaticity coordinates that lie beyond the range of the iso-temperature lines shown in Figure 1.8 should not be given a correlated colour temperature. The light from such light sources will appear greenish when the chromaticity coordinates lie above the Planckian locus or purplish if they lie below it.

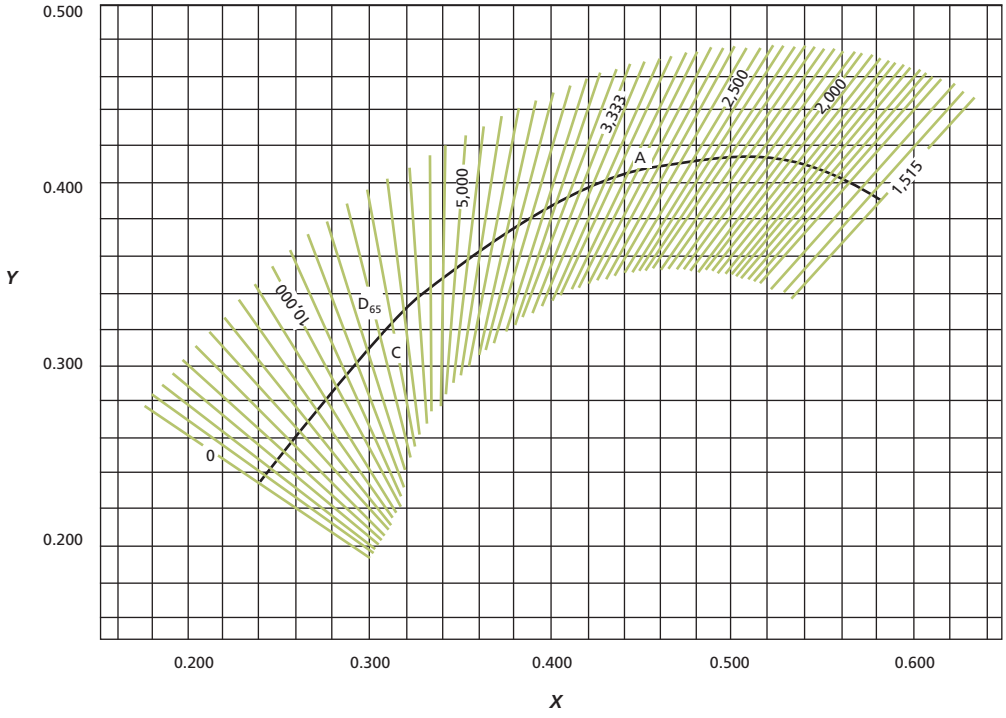

Figure 1.8 The Planckian locus and lines of constant correlated colour temperature plotted on the CIE 1931 (*x*,*y*) chromaticity diagram. Also shown are the chromaticity coordinates of CIE Standard Illuminants, A, C, and D65 (from the IESNA Lighting Handbook).

1.4.4 CIE colour rendering index

The CIE colour rendering index measures how well a given light source renders a set of standard test colours relative to their rendering under a reference light source of the same correlated colour temperature as the light source of interest.