

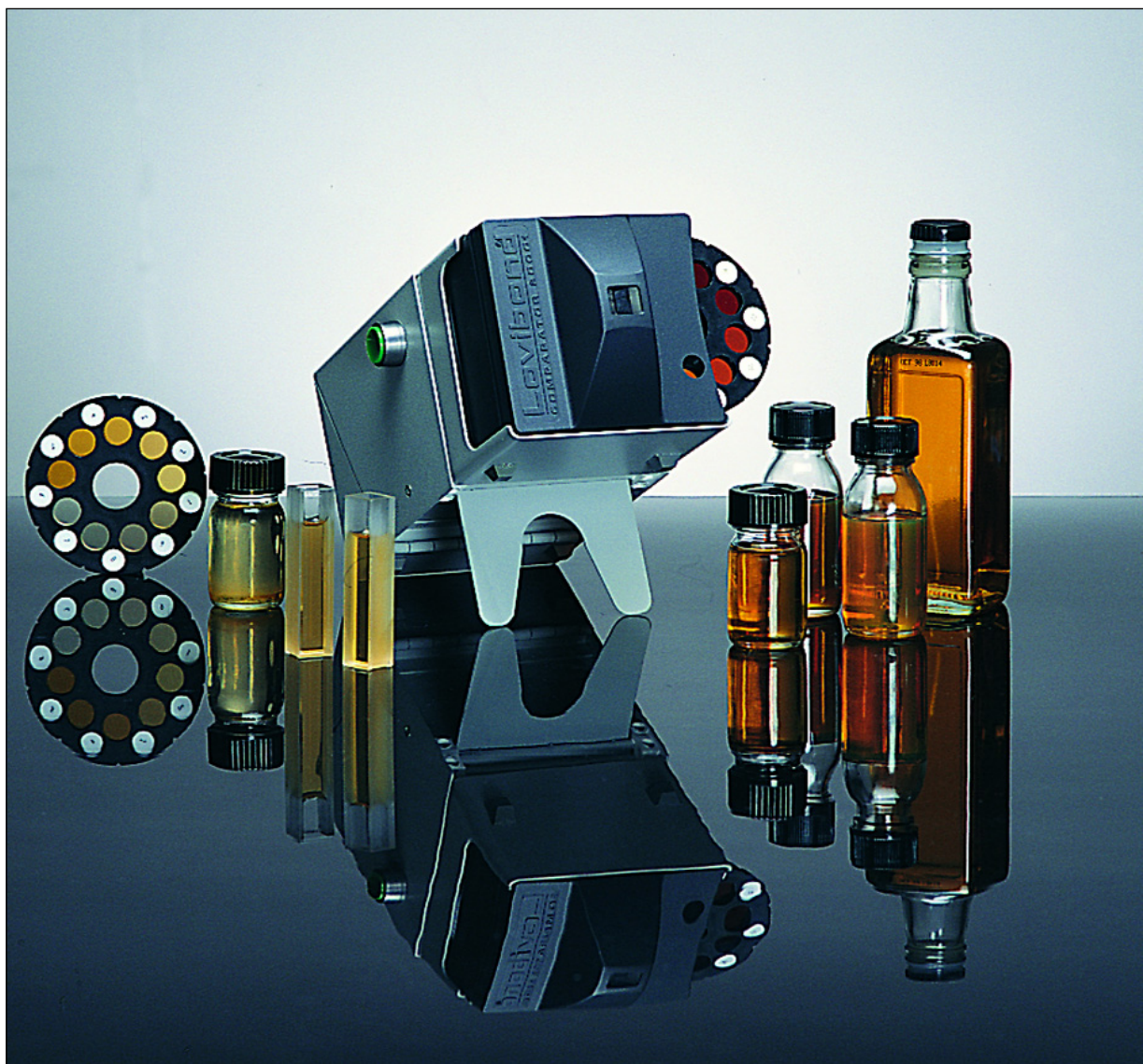


# **Colour Grading according to EBC Colour**

**2 - 27 mg**

**Pt/l**

## **Lovibond® AF330**



## Lovibond® AF330

### Colour grading according to EBC Colour

The EBC colour scale, developed by the Institute of Brewing and the European Brewing Convention, is a recognised method for colour grading of beers, malts and caramel solutions as well as similarly coloured liquids. It has a range of 2 to 27 visual units, yellower pale worts and lagers at the low end of the scale and the redder colour of dark worts, beers and caramels at the upper end of the scale. If the sample falls outside this range (eg concentrates, syrups) then sample dilution and, in the case of visual EBC, a different path length cell, can be used to bring the reading within the EBC range.

The conventional way to measure the colour of beer is using a colour comparator with a series of Lovibond® coloured glass filters, and to assess the colour by direct visual comparison with the glasses. To reduce the subjectivity associated with visual grading methods, a photometric method of colour grading has been developed; it is based on the absorbance of a beer at a single wavelength, multiplied by a suitable factor. Empirical investigations to determine the wavelength which provided optimum correlation with the values provided by the Lovibond® glasses has resulted in the adoption of measurements at 430 nm as the new EBC Recommended Method.

However, representing beer colour with a single number based on only a small portion of the visible spectrum cannot adequately represent the variations in shade and intensity of colour that exist between beers. Although different beers may have similar transmissions at 430 nm, in the rest of the visible spectrum their transmission characteristics can differ markedly so that beers with the same EBC colours may be discriminated by human observers. This has resulted in the use of CIE LAB L\*a\*b\* absolute colour space for beers, which are useful for samples which are off hue, too bright or dull to obtain a good EBC colour match.

#### Visual Grading of EBC Colour

Lovibond® Comparator 2000 with Daylight 2000 Lighting Unit

The Lovibond® Comparator 2000+ is a versatile 2-field visual comparator with an optional illumination system to guarantee correct lighting conditions for colour grading and colorimetric analysis. The sample colour is visually matched in the comparator instrument against graded coloured glass filters in Lovibond® test discs.

Lovibond® EBC discs for the Comparator 2000+ are available as follows:

Disc	EBC Range Covered	Order Code	Lovibond® instrument
4/14A	2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0	24 14 10	Comparator 2000+
4/14B	6.0, 6.5, 7.0, 7.5, 8.0, 8.5, 9.0, 9.5, 10.0	24 14 20	Comparator 2000+
4/14C	10, 11, 12, 13, 14, 15, 16, 17, 18	24 14 30	Comparator 2000+
4/14D	19, 20, 21, 22, 23, 24, 25, 26, 27	24 14 40	Comparator 2000+
4/14AB	4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0	24 14 90	Comparator 2000+
EBC/BC	8.0, 8.5, 9.0, 9.5, 10.0, 11, 12, 13, 14	29 54 00	Comparator 2000+
EBC/CD	16, 17, 18, 19, 20, 21, 22, 23, 24	29 54 10	Comparator 2000+

Lovibond® AF 330

The Lovibond® AF 330 is a special kit based on the Lovibond® Comparator 2000+ for visual colour grading according to EBC Colour over the range 2 - 27. The colour is determined by matching the sample in a 25 mm optical glass cell with the precalibrated coloured glass filters.

The Lovibond® AF 330 is supplied with the following equipment:

Lovibond® Comparator 2000+	A comparator instrument designed for colour matching of samples with coloured glass filters in Lovibond® test discs.
Daylight 2000 lighting unit (Illuminant B)	Accuracy in colorimetric analysis benefits from a constant and stable light source as provided by the Lovibond® Daylight 2000 bench-top illumination system. This mains operated unit for EBC Colour is corrected to CIE standard illuminant B using a tungsten halogen lamp and a calibrated colour temperature correction filter, which guarantees uniform lighting conditions for colour matching by day or night and irrespective of ambient lighting.
EBC Discs 4/14A, 4/14B, 4/14C, 4/14D	Set of 4 EBC discs containing coloured glass filters for the range 2- 27
W680/OG/25	Optical glass cell with a 25 mm path length.