Colour Grading of Petroleum Products according to the
ASTM Color Scale (ASTM D1500)
Lovibond Petroleum Oils Comparator, AF650

ASTM Color Scale

ASTM Color as specified in ASTM D1500 is a single number colour scale for grading petroleum products. The scale is defined by 16 glass standards of specified luminous transmittance and chromaticity, graduated in steps of 0.5 from 0.5 for the lightest colour to 8.0 for the darkest. It is intended for a variety of petroleum products such as lubricating oils, heating oils, diesel fuel oils, mineral insulating oil and solid petroleum waxes and has been adopted by other standardising bodies as listed below.

References: ASTM D1500; ISO 2049; IP 196; DIN 51 578; BS 5859; JIS K2580; NF T 60-104; NBN T52-109; FTMS 791 102

Lovibond Petroleum Oils Comparator

The Lovibond Petroleum Oils Comparator is a 3-field instrument for visually determining the ASTM Colour of samples by direct comparison with coloured glass standards. It incorporates the 16 glass standards which make up the scale in a pair of discs:

Disc	*Colour Standards*
1	0.5, 1.5, 2.5, 3.5, 4.5, 5.5, 6.5, 7.5
2	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0

With a 3-section field of view, the sample and two adjacent standards on the ASTM Color Scale are viewed simultaneously, making it easier to achieve the optimum colour match. For rapid colour grading within predetermined colour limits, the glass standards can be set to the two limiting colours, making it easy to see if the sample is within tolerance. The tungsten halogen light source is colour corrected to CIE standard illuminant C, which guarantees constant lighting conditions for colour grading, day or night and irrespective of ambient lighting.

Principle of Operation

Three cylindrical glass sample jars with an internal diameter of 33mm are housed in the 3-section sample container; the central jar is half filled with the sample and the outer ones are filled with distilled water. The sample is viewed through a prism which brings the sample and the standards into adjoining fields of view. The two discs containing the colour standards are rotated by turing the control knobs on the front of the comparator until the colour of the oil sample falls between two standards which are 0.5 apart, or until it exactly matches one of the standards. The reading given directly as ASTM Color is then taken from the scale on the control knobs. Samples which are not clear, such as petroleum waxes, can be heated to above the cloud point; samples that are darker than 8.0 colour can be diluted with solvent kerosine.

Technical Specification

Measuring principle	Visual comparison with permanently coloured glass standards
Mode	Transmittance
Light source	Tungsten halogen lamp, 12 Volt, 20 Watt
Illuminant	C
Path length	33mm
Power pack	12 Volt ac, switchable to suit 220/110 Volt supply
Approvals	CE
Instrument housing	Fabricated mild steel
Dimensions	Width 255 mm, depth 250 mm, height 170 mm
Weight	5.5kg

The Lovibond Petroleum Oils Comparator is supplied with a set of three cylindrical glass sample jars

Accessories

Certificate of Conformance confirming that the glass standards conform to the required colorimetric coordinates of ASTM D1500.
Cylindrical glass sample jar, AF 763 (Order Code 35 76 30)
Tungsten halogen lamp 12 Volt, 20 Watt (Order Code 12 23 40) - 1997 onwards
Halogen lamp 6 Volt, 20 Watt (Order Code 30 37 79) - pre 1997

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