Ford Motor Company

FORD LABORATORY TEST METHOD EU-BI 009-03

COLOUR DIFFERENCE EVALUATION

Application

This procedure describes a method for determining the quantitative colour difference between any two visually similar materials.

Equipment Required

Trilac Recording Spectrophotometer

Source:

Kollmorgen (UK) Ltd.
219 Kings Road
Reading, Berkshire

or

Kollmorgen Colour Systems
3 & 5 Passage Boutet
94 Arcueil
France

Computer System

For calculating and printing spectral reflectance and colour differences.

Source: Instrumental Colour Systems
42 Kennet Side
Reading, Berkshire

Curve Plotter

White Comparison Standard

Barium sulphate ex Eastman Kodak has been found suitable. White vitrolite may also be used after calibration against barium sulphate.

Standard Illuminant

1964 C.I.E. Colour Matching Functions weighted for Macbeth Daylight at 7500 K.

Colour Difference Equation

Fricle-MacAdam-Chickering (FMC-2) formula - see Appendix.

Note: Alternative instruments and systems may be found suitable but must be approved by Central Laboratory.

In cases of dispute, the system as used by Central Laboratory will be used as a referee.

Date	Action	Revisions
2001 03 13	Revised	Editorial – no technical change A. Cockman
1994 02 28		

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Samples for Measurement

1. Measurements are intended to correlate to the "face" colour or "head-on" condition of samples, not the "flop" or oblique angle.

2. Samples should not be measured which exhibit patterns of two or more colours, each contributing to the total appearance of the area in question. A uniform area smaller than the smallest accepted by the instrument is not measurable.

3. Colour difference calculations are not valid when substantial differences exist in gloss or texture between sample and standard.

4. Samples exhibiting noticeable fluorescence are not measurable.

5. The best correlation to visual judgment results when sample and standard are non-metameric; that is, the spectrophotometric properties are essentially similar.

Conditioning and Test Conditions

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- 2 °C and 50 +/- 5 % relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified.

Procedure

1. Viewing conditions of the instruments are to be i, (diffuse) where 'i' is angle at which light is incident on the samples, not to be greater than 10°, and that light viewed by the instrument is diffusely reflected from the sample; or alternately, (v, diffuse) where illumination of the sample is diffused and 'v' is an angle of viewing not greater than 10°.

2. The specular component is to be included in all measurements.

3. Calibration of the instruments must be followed according to the written instructions of the manufacturers.

4. Sample and standard must be presented to the measuring port in the same direction according to grain, machine direction or mould grating.

5. A measurement is to be made for the standard with each evaluation of a new sample.

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