

Ethanolamines/Glycol Ethers

Tier 3 Procedure

Section Number: 635
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Title: Steps To Calibrating Color Machine Using Factory Tiles
References: Glossary Of Equipment Identification (Text # 114)
Hunter Lab Instruction Manual
630 Standardize Klett Cell for Color Analysis

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635. Steps To Calibrating Color Machine Using Factory Tiles.

1.0 Objective:

1.1 To provide a step by step procedure for the calibration of this quality instrument and document variability of machine.

2.0 Responsibility:

2.1 It is the responsibility of the lab technician to ensure that this quality instrument is always in a know state of calibration.

2.2 The lab technician is responsible to the operations supervisor for the efficient operation of this instrument.

3.0 Background:

3.1 APHA is a single number yellowness measure based on dilution of a standard potassium chloroplatinate (P+Co) stock solution. Each APHA unit is based on dilution by volume of 500 parts of P+Co solution per million parts of distilled water. Distilled water ('water-white') is rated as APHA 0.

3.2 The APHA rating for a sample is determined by software which takes the readings from the CIE tristimulus values (CIEXYZ) for each sample.

3.3 There are a set of standard enamel tiles for each of the CIE values to calibrate the machine.

3.4 As in the tile calibration, there is also some normal variation in the APHA ratings of samples. This variance is <.3 units deviation.

3.5 This variance is primarily due to using a linear fit in the software to match a non-linear phenomenon. Below APHA 300, the software measures slight high, giving a more conservative value. The curve fit is very accurate at APHA 300, and above this point, the software produces lower results relative to solution values.

3.6 In order to insure that all analysis are within specification, due to the variability of the instrument and software, **the APHA color on all products must be at least .3 units below the production/sales specification.**

4.0 Steps To Calibration:

4.1 Press F10 to back out of current mode.

4.2 Press F3 to change operating modes.

4.3 Press F1 to choose modes.

4.4 Press F1 for choice. Changed from transmittance to reflectance specular included.

4.4.1 Press F10 to back out.

4.5 Press F10 to back out.

4.5.1 Remove any sample and take a reading (Press F1)

NOTE: The following steps are accomplished by pulling the spring loaded plate on the left outside wall of the instrument and inserting the proper piece. Use caution not to let the spring pop closed. The small white plate may break.

4.5.2 Place light trap (black cup) at port, then take a reading. (press F1)

4.5.3 Place white standard at port, then take a reading (press F1). Be sure not to touch the center of the standards. Handle on edges.

4.5.4 Place gray standard at port, then take a reading (press F1).

4.6 Press F1 - to display color machine in order to read green tiles.

4.6.1 Place green tile at port and take a reading (press F1). Record the values for x, y, and z. REMOVE GREEN TILE FROM PORT AFTER RECORDING READING.

4.6.2 Press F10 to back out of mode.

4.6.3 Press F3 to change operating mode.

4.6.4 Press F1 to select mode.

4.6.5 Press F3 for transmittance.

4.6.6 Press F10 finished - to back out.

4.6.7 Press F10 to back out.

4.7 Remove sample or standard and take a reading (press F1).

4.7.1 Place black card in light path, behind clip on right side in front of lens, take a reading (press F1).

4.7.2 Place klett cell with deionized H2O on the shelf on the left side in front of and against sphere opening and small metal stop. (press F1)

4.7.3 Press F3 - to change operating modes.

4.7.4 Press F4 - to change color scales.

4.7.5 Press F5 - single scales.

4.7.6 Press F8 - to select apha.

4.7.7 Press F10.

4.7.8 Press F10.

4.7.9 Press F10.

4.7.10 Press F1 - for color machine display.

5.0 Revisions:

Revision No. 1	12-21-94	Yearly review
Revision No. 2	07-18-95	Yearly review