

**IBM**IR  
QUALITY ENGINEERING  
LABORATORY BÜBLINGEN

Title: Color - Card Stock

**A. DEFINITION**

This test provides a method of determining the color of cardstock used in IBM card plant production.

**B. APPARATUS**

1. Photoelectric Reflectance Photometer "Elrepho", equipped with tristimulus filters.

Vendor: Carl Zeiss

7082 OBERKOCHEN/Württ.  
Western Germany

The instrument conforms to the requirements of color measurement set by the International Commission on Illumination and for Illuminant C.

2. White Standard, supplied to the photometer.
3. Color Standards for each DP cardstock color, supplied by IBM - Card Quality Lab., Sindelfingen/Germany.
4. Calibration chart, established by operations mentioned in C1. to 8.

**C. CALIBRATION CHART**

1. Open cold water supply of photometer. Switch on power supply unit and lamp. Position filter revolver to 12.
2. Set photometer to zero by turning the left knob, first in the insensitive range, then, by pressing the sensitivity key, in the sensitive range.
3. Position filter FMX/C and turn the measuring drum of photometer to the value  $R_{XS}$  recorded on the cover sheet of the color standard.
4. Lift cover sheet of color standard and place color standard towards the aperture. Set the photometer to zero by turning the right upper knob, first in the insensitive range, then, by pressing the sensitivity key, in the sensitive range.

D. Müller  
Prepared by:

Approved by: *[Signature]*

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5. Replace color standard by the carefully cleaned white standard. Set the photometer to zero by turning the measuring drum, first in the insensitive, then in the sensitive range.
6. Read reflectance on measuring drum to 0,1 % and record. This is the calibration value  $R_{XW}$ .
7. Read and record the calibration values  $R_{YW}$  and  $R_{ZW}$  by following the same sequence of operations as mentioned in 3. to 6., using filters FMY/C resp. FMZ/C and values  $R_{YS}$  and  $R_{ZS}$ .
8. Read the 3 calibration values  $R_{XW}$ ,  $R_{YW}$ ,  $R_{ZW}$  for each of the color standards and record on a chart.

The calibration values and the white standard are used for control of card-stock colors. The color standards are not required for the test procedure. They should be carefully preserved and should not be exposed to light, heat, moisture and vapors.

Control calibration values by operations 1. to 8. every six months.

#### D. TEST SPECIMEN

1. The test specimen shall consist of one group of four DP cards, felt side of each card being at the top.
2. The cards shall be acquired from the test sample in such a manner as to be thoroughly representative of it and must be unprinted.

#### E. TEST PROCEDURE

1. The photometer is prepared for measuring as mentioned in C 1. to 2.
2. Position filter FMX/C and adjust measuring drum to calibration value  $R_{XW}$  of the color to be measured.
3. Place the clean white standard towards the aperture. Set the photometer to zero by turning the right upper knob, first in the insensitive range, then, by pressing the sensitivity key, in the sensitive range.

D. Müller  
Prepared by:Approved by: *L. Müller*4/25/71  
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4. Replace the white standard by the four card specimen.
5. Set the photometer to zero by turning the measuring drum, first in the insensitive range, then in the sensitive range. Read % reflectance  $R_X$  on the measuring drum.
6. Remove the top card just tested and place it on the bottom of the four card specimen. Read % reflectance  $R_X$  of each of the remaining cards as mentioned in 5. Average the four readings and record.
7. Turn the specimen and read the reflectance  $R_X$  on wire side of each of the four cards by following the same sequence of operations as mentioned in 5. to 6. Average the four readings and record.
8. Position filter FMY/C and adjust measuring drum to the calibration value  $R_{YW}$  of the color to be measured. Follow the same sequence of operations as mentioned in 3. to 7. and read % reflectance  $R_Y$  of the specimen.
9. Position filter FMZ/C and adjust measuring drum to the calibration value  $R_{ZW}$  of the color to be measured. Follow the same sequence of operations as mentioned in 3. to 7. and read % reflectance  $R_Z$  of the specimen.

**F. REPORT**

1. Report  $R_X$ ,  $R_Y$ ,  $R_Z$  of felt and wire side to 0, 1 % reflectance.