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Report No. 8926-104

Material - Finishes and Coatings - Reflective Tapes -
No. 630, 633 and 3270, Minnesota Mining and
Manufacturing Co.

Reflectance Characteristics

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Manufacturing Co.

Reflectance Characteristics

Abstract

The specular reflectance of Minnesota Mining and Manufacturing Co. No. 633
gold colored D.S. Scotchcal, and No. 630 chrome colored D.S. Scotchcal
films, and No. 3270 silver W/A D.S. Flat Top (R) Scotchlite reflective
film was determined in the 0.35 to 2.5 micron wavelength range with a
Beckman DK-2 recording spectrophotometer, and in the 1.0 to 15 micron wave-
length range with a Beckman IR-4 recording spectrophotometer. Recordings
of all measurements are given.

Reference: Faulkenberry, B. H., Graber, F. M., .eller, E. E.,
"Reflectance Characteristics of Reflective Tapes,
General Dynamics/Convair Report 59-191, San Diego,
California, 7 May 1959. (Reference attached).
TITLE

REPORT NO. MP-59-192
REFLECTANCE CHARACTERISTICS OF REFLECTIVE TAPES

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NO. OF DIAGRAMS 12

REVISIONS
OBJECT:

To determine the reflectance vs. wavelength of No. 633, No. 630 and No. 3270 reflective tapes which were received from the Minnesota Mining and Manufacturing Company.

TEST SPECIMENS:

1. No. 633  Gold Colored D.S. Scotchcal Brand Film
2. No. 630  Chrome Colored D.S. Scotchcal Brand Film
3. No. 3270 Silver W/A D.S. Flat-Top (R) Scotchlite Brand Reflective Sheeting.

TEST PROCEDURE:

A Beckman DK-2 recording spectrophotometer was used to determine the diffuse and total reflectance over the range of 0.35 to 2.5 microns. The total reflectance over this range was calculated by using the following relationship:

Total Reflectance = Diffuse Reflectance + Specular Reflectance.

A Beckman IR-5 spectrophotometer was used to determine the spectral reflectance of the three samples over the range of 1.0 to 2.5 microns. The specimens were maintained at room temperature for all measurements.

RESULTS:

The reflectance characteristics of the three reflective tapes are shown in Figures I through XI.
Figure 10

SAMPLE: 630 Chrome-colored P.S.
Scotchcal Brand Film

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PATH: _____ mm
SOLVENT: _______
ORIGIN: _______
REFERENCE: _______
SOLVENT: AIR X

SPEED: 0.5 Hour/Scale
GAIN: 1.5 X
PERIOD: 2
SLIT SCHEDULE: 50 µm
ORIGIN SCALE: 50
KCl PRISM X: 1920-87
ANALYST: ____________

BECKMAN
SPECTROPHOTOMETER
MODEL 184
Figure II
Spectrophotometer
Sample: 633 Gisol Solvol 231
Brand: Film
Page: 12-1
Report: NF11-41

Path: mm
Solvent:
Origin:
Reference:
Solvent: Air

Speed: 330/40 scan/100
Gain: 1.000
Period: 2500/2800
Ordinate scale: 50
Analis: Foulonberry

Beckman
Spectrophotometer
Model IR4