COMPARISON OF MATERIALS

	DESCRIPTOR	COMMERCIAL MATERIALS	CGW MATERIALS
1.	Fabrication Philosophy	Empirical	Based on Theoretical Investigations
2.	Gain Function	Medium to High Gain	Low to High gain
3.	Brightness Variation*	90% greater than ±60%	Controllable 95% less than ±15%
4.	Diffuse Transmittance *	On the average only half the theoretical limit. Lowered by the addition of absorbing material.	90% of materials within 10% of theoretical limit.
5.	Fraction of Energy in Viewing Angle		
6.	Brightness		
7.	Specular Transmittance	None	Minor problems - Wavelength dependent
8.	Diffuse Reflectance* (Ambient light sensitivity)	Not optimum	Near optimum
9.	Resolution	To 20 cycles/mm	To 20 cycles/mm
10.	Color Fidelity	Good	Generally Good
11.	Maximum Size	No limit	No limit
12.	Cost	$2 - $30 per sq. ft.	?

*Viewing properties compromised in choosing a rear projection screen.

Figure 2. Apparatus for Measurement of Diffuse Reflectance.

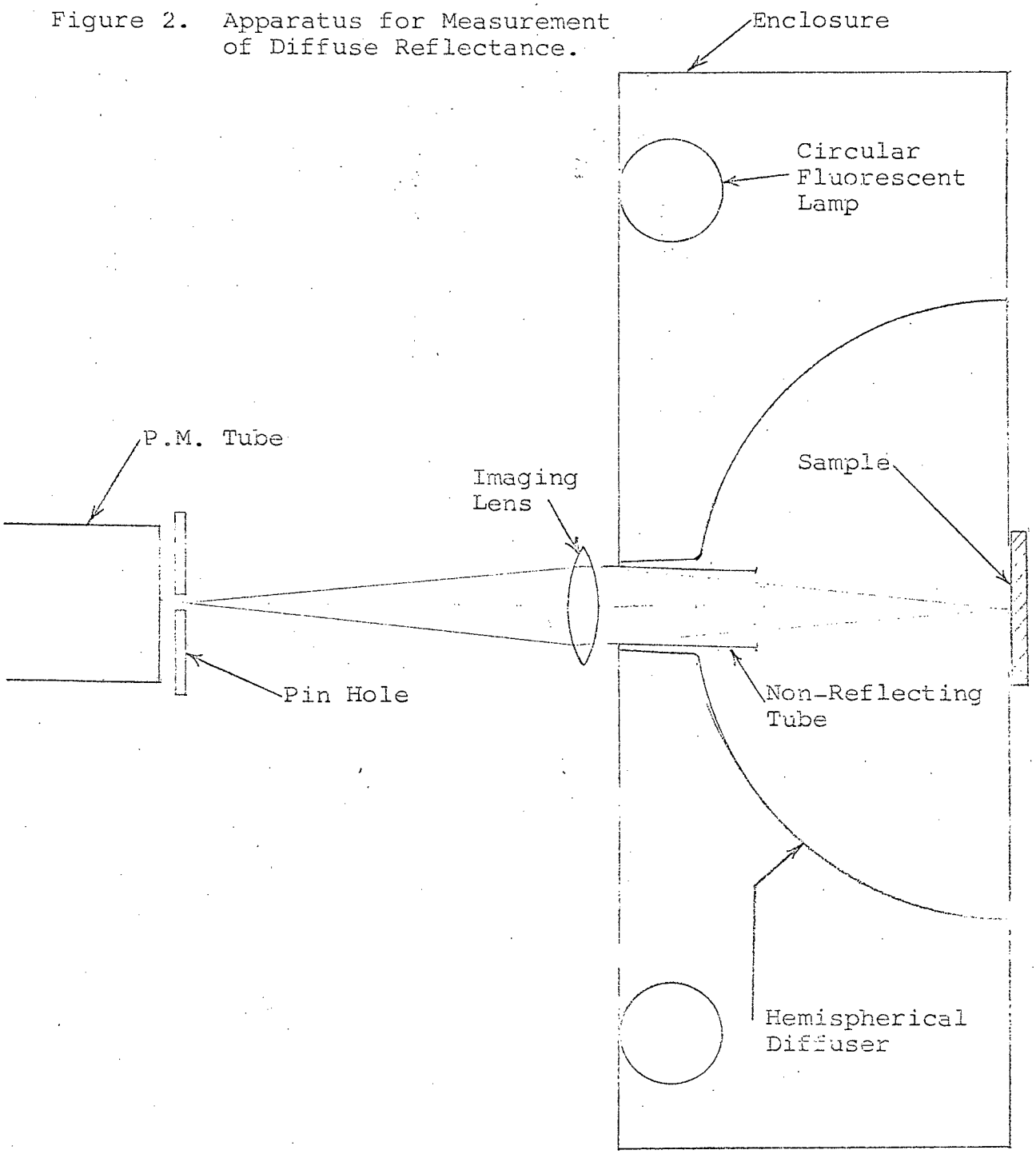


TABLE I

Comparison of the Theoretical and Measured Values of T_{45} and R_d of Some Commercial Materials and Corning Materials

Commercial Materials	G(o)	R_d Theo.	R_d Meas.	T_{45} Theo.	T_{45} Meas.	K*
SN2149	1.2	60%	46 %	21 %	17 %	0.81
LS60G	3.8	31	6	45	25	0.56
RAVEN	5.0	25	10	53	33	0.62
LS60STG	5.8	22	6	58	27	0.47
LUX 70	6.2	20	16	60	37	0.62
Type 4	6.7	19	6	62	24	0.39
Corning Materials						
AC-18A	1.6	52	53.	26	23	0.89
AC-18C	1.7	50	32.	27	25	0.93
AD-19	2.4	41	31.	34	33	0.97
AD-21	4.1	30	17.	47	44	0.94
AD-62	2.8	38	34	37	36	0.97
AD-64	4.8	26	28	52	53	1.02
AV-12	2.1	45	48.	31	28	0.94

FOTOFORM

$$*K = \frac{T_{45}\ (Meas.)}{T_{45}\ (Theo.)}$$

$$\frac{\gamma}{\gamma_0} = \frac{1}{1 + \frac{I_{amb}\, Rd}{I_{Phot}}}$$

S-50R T_{45} = .31 V = 41% Gain(0) = 3.7	LUXCHROME 70 T_{45} = .37 V = 67% Gain(0) = 6.7	SN-2149 T_{45} = .17 V = 4% Gain 0 = 1.2
LS-75G T_{45} = .52 V = 95% Antigain = 29	A B C D E F G H I	LS-40 G
LS-60 PL T_{45} = .4 V = 67% Gain 0 = 6.0	OC-50 FM T_{45} = .51 V = 69% Gain 0 = 10	TR-50PL T_{45} = .27 V = 24% Gain = 2.4

A AC-18B T_{45} = .30, V = 14%, Gain 0 = 2.5

B AC-19B T_{45} = .27, V = 3%, Gain 0 = 1.9

C AS-4A T_{45} = .89 V = 8%, Gain 0 = 2.2

D AS-9A

E AL-3A

F AL-4A

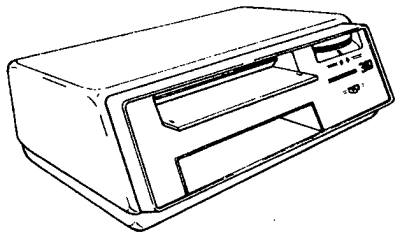
G AD-17 T_{45} = .43, V = 55%, Gain 0 = 7.1

H AR-3A

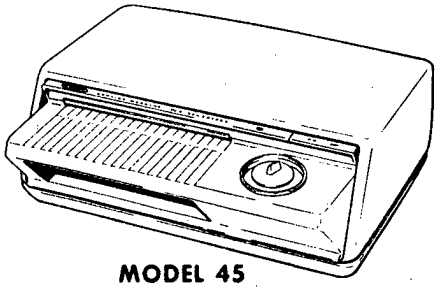
I AL-6A

INSTRUCTIONS FOR MAKING 3M BRAND TYPE 888 COLOR POSITIVE TRANSPARENCIES

3M Brand Type 888 Transparency Film is designed to be exposed either on the 3M Brand "The Ninety Six" Infrared Transparency Maker-Copier or the 3M Brand "Secretary" Copying Machine. Type 888 film produces images in one of five colors -- red, green, blue, orange or purple -- in approximately four seconds.



MODEL 96



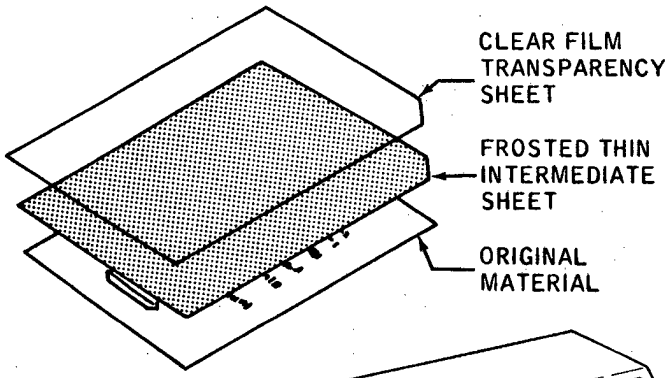
MODEL 45

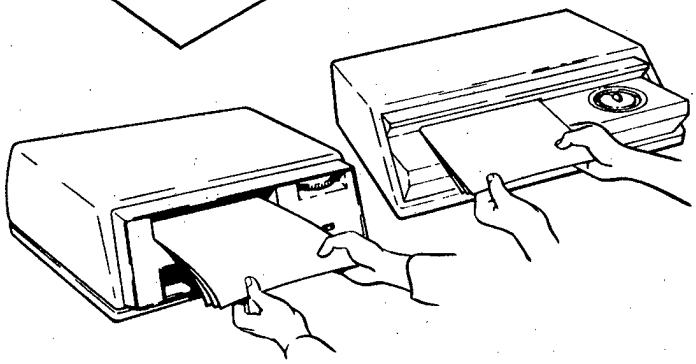
LAYUP

Any infrared copyable original material* can be used to make Type 888 Transparencies in five easy steps.

1. Remove frosted, thin intermediate sheet from top box and position it over original with notch at upper right-hand corner, as shown.
2. Remove a clear film transparency sheet from lower box and position it over intermediate and original with notch as shown.
3. Set machine exposure dial (see EXPOSURE SETTING, below).
4. Pass this assembly, film side up, through copying machine.
5. Separate intermediate from transparency film with a brisk, peeling motion. Transparency is now ready for projection.

*The original to be copied must be compatible with the infrared process. Compatible materials include black printers ink, graphite pencil, carbon content typewriter ribbon, black sign pens, India Ink and 3M Brand Black Transparency Marking Pens.

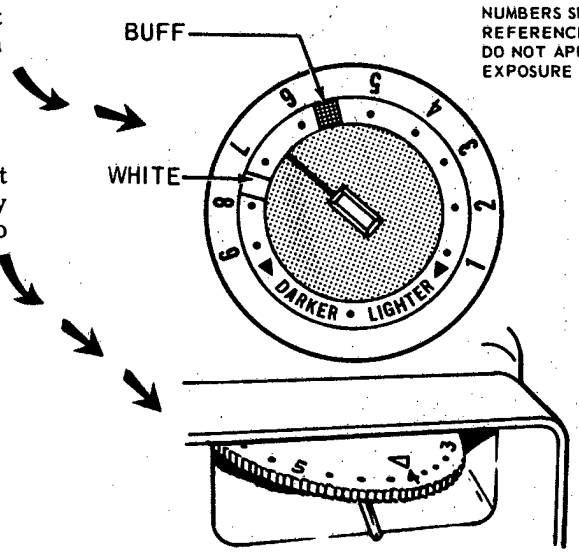




EXPOSURE SETTING

3M BRAND MODEL 45 "SECRETARY" COPYING MACHINE: Set exposure dial approximately midway between the 6 and 7 dot on the dial indicator.

3M BRAND MODEL 96 TRANSPARENCY MAKER-COPIER: Set exposure dial between numbers 3 and 5. This setting will vary depending on voltage at the location. Use a "Type 888" tab to show proper setting.



NOTE

Type 888 Red and Orange require development at a slightly slower setting on the Model 45 or Model 96.
In order to strengthen red and orange, the setting should be set at approximately number 3 on the Model 96 and dot 7 on the Model 45. The colors will then come in much denser.

TIPS AND TECHNIQUES

PEELING INTERMEDIATE:

If the intermediate leaves white specks of material on your transparency, increase the speed of the machine (to 6 on the Model 45 or 5 on the Model 96), and separate the intermediate and transparency more quickly. Brush lightly with fingers to remove specks.

FAINT IMAGE:

If your image is faint, decrease the machine speed by moving the exposure dial to 7 on the Model 45 or 4 on the Model 96.

GHOSTING OR BACKGROUND COLOR TINT:

If you get a faint image from the reverse side of your original, increase machine speed by moving the exposure dial to dot 6 on the Model 45 or number 4 on the Model 96. Likewise, increase machine speed slightly if your film background is color tinted.

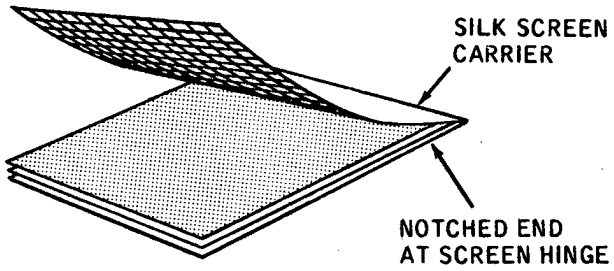
NO IMAGE:

If no image appears, check your LAYUP procedure.

SILK SCREEN CARRIER:

The silk screen carrier should be used for originals with large black printing areas. The procedures for using this carrier are as follows:

1. Follow steps 1 and 2 of LAYUP procedure (see front page).
2. Set exposure dial at dot 7 on the Model 45 or about number 3 on the Model 96.
3. Place this "sandwich" in a silk screen carrier, film side up and notched end at screen carrier hinge.
4. Continue with steps 4 and 5 of LAYUP procedure.



3M BRAND INFRARED TRANSPARENCY FILMS

TYPE NO.	DESCRIPTION	CHARACTERISTICS	OPERATING TIPS
125	Heavyweight. Positive - clear background.	Etched white image. Image can be colored with 3M Brand coloring pencil. Excellent overlay film.	Exposure setting for the Model 96 is number 4.* Exposure setting for the Model 45 is dot 7.
127	Heavyweight. Positive - clear background.	Black image. Easily read on projector stage. Good lay-flat quality. Excellent diazo master or master for 3M Brand Type 131 color positive.	Exposure setting for the Model 96 is between numbers 4 and 5.* Exposure setting for the Model 45 is dot 7.
129	Medium weight. Positive-tinted background. Available in red, blue, green, and yellow.	Similar to Type 127 but black image on tinted background. For change of pace and easy reading on projector stage.	Exposure setting for the Model 96 is between numbers 4 and 5.* Exposure setting for the Model 45 is dot 7.
128	Heavyweight. Negative. Available in silver, red, blue, green, and yellow.	Clear or colored image on dark background. Excellent for "impact" situations.	Exposure setting for the Model 96 is between numbers 3 and 4.* Exposure setting for the Model 45 is between dots 7 and 8.
888	Heavyweight color positive. Available in red, blue, green, orange, and purple.	Color image on clear background. Excellent for overlays, for change of pace, easy reading on projector stage. Gives "impact" to presentations.	Exposure setting for the Model 96 is between numbers 3 and 4.* Exposure setting for the Model 45 is between dots 6 and 7.

*Note: These settings are appropriate for a line voltage of 120 volts. Dial settings will be correspondingly lower for a lower line voltage.

Transparencies of photographic quality can also be made from any color or type of original in either bound or sheet form by using 3M Brand Type 628 Projection Transparency Film with either the 3M Brand "The Seventy" Transparency Maker-Copier or the 3M Brand "107" Dry Photo-Copier.

3M Brand Color Positive Type 131 transparencies, for producing a single color image on a clear background, are available in five colors for use with "The Seventy" or the "107" Dry Photo-Copier.

344-1086-091

Visual Products Division 3M COMPANY