TRANSMISSION OF WRATTEN FILTERS

Compiled by Allie C. Peed, Jr. for The Eastman Kodak Company

Data condensed from Kodak Wratten Filters for Scientific and Technical Use published by the Eastman Kodak Company, manufacturers of the filters.

The following pages give (1) percentage luminous transmittance at wave lengths from 400 to 700μ at intervals of 10μ for the standard illuminant "C" adopted by the International Commission of Illumination, (2) dominant wavelength in millimicrons, and (3) percentage of excitation purity. Values of wave length followed by "c" indicate the complementary wave lengths of purple filters which do not have a dominant wave length.

All colorimetric specifications are based on the 1931 standard ICI colorimetric and luminosity data.

The transmittance data are given as representing standard samples of the filters. They are intended only for the information of users in choosing filters which will meet their requirements. Values taken from the tables of data should not be used by research workers as representing precisely the absorption characteristics of a particular filter. If such precise data are needed, they should be determined for the particular filter being used.

Where the spectra extend into the ultraviolet this fact is indicated by an asterisk (*) in the transmission tables immediately beneath the filter number, and quantitative data are not given. The manufacturer should be consulted for this information. Transmission in the ultraviolet of wave lengths less than 330μ will be eliminated in the case of cemented filters, as glass absorbs ultraviolet radiation of wave lengths shorter than about 330μ.

Stability ratings are given as three letter combinations following the filter description in the table below. In establishing the stability classifications each filter is exposed to a selected light source for a specific time interval. The following grading system is used to describe the result:

Class A — stable
Class B — relatively stable
Class C — somewhat unstable
Class D — unstable

The classification letters, for example, AAA, describe the stability to the following three exposure tests in this order:

1. Two weeks' exposure to daylight in a south window
2. Twenty-four hours' exposure to a "Fade-Ometer"
3. Two weeks' exposure at two feet from a 1000-watt tungsten lamp.

Filters are supplied in two forms: as lacquered gelatin film, or as a gelatin film cemented between pieces of optical glass. Filters in glass are cemented between sheets of plane-parallel glass, which is surfaced in quantities and is of sufficient accuracy for general photographic work, and for most scientific purposes.

Most Wratten Gelatin Filters are stocked in 2- or 3-inch squares. Stocks of 2- or 3-inch square filters cemented in glass are maintained only in filters usually used for general photographic work.

The booklet "Kodak Filters and Lens Attachments" gives more valuable information on this subject.

FILTER DATA

No.	Description, use, and stability
	Colorless
0	For compensating thickness of other gelatin filters in optical systems, AAA.
1	Absorbs ultraviolet below 360 mμ, DDD.
1A	Kodak Skylight Filter — Reduces excess bluishness in outdoor color photographs in open shade under a clear, blue sky, ACA.
	Yellow
2B	Absorbs ultraviolet below 410 mμ, ACA.
3	Light yellow, CCD.
3N5	No. 3 plus 0.5 neutral density, AAA.
4	Light yellow — Approximate correction on panchromatic materials for outdoor scenes, including sky, CCC.
6	K1 — Light yellow — Partial correction outdoors, BBA.
8	K2 — Yellow — Full correction outdoors on Type B panchromatic materials. Widely used for proper sky, cloud, and foliage rendering. Green separation for Fluorescence Process, AAA.
8N5	No. 8 plus 0.5 neutral density, AAA.
9	K3 — Deep yellow. Moderate contrast in outdoor photography (with black-and-white films),AAA.
11	X1 — Greenish yellow. Correction for tungsten light on Type B panchromatic materials; also for daylight correction with Type C panchromatic materials in making outdoor portraits, darkening skies, or lightening foliage, AAA.
12	Minus blue. Haze cutting in aerial photography, AAA.
13	X2 — Yellow green. Correction for Type C panchromatic materials in tungsten light, ABA.
15	G — Deep yellow. Overcorrection in landscape photography. Contrast control in copying and in aerial infrared photography, AAA.
16	Blue absorption, AAB.
18A	Transmits ultraviolet and infrared only (glass), AAA.
	Oranges and Reds
21	Blue and blue-green absorption, CBB.
22	Yellow-orange. For increasing contrast in blue preparations in microscopy. Mercury yellow, BAC.
23A	Light red. Two-color projection — contrast effects, BAB.
24	Red for two-color photography (daylight or tungsten). White-flame-arc tricolor projection, AAB.
25	A — Tricolor red for direct color separation. Contrast effects in commercial photography and in outdoor scenes. Two-color general viewing. Aerial infrared photography and haze cutting, AAA.
26	Stereo red, AAA.
29	Red color separation from transparencies and for the Kodak Fluorescence Process. Strong contrast effects. Copying blueprints. Tungsten tricolor projection, AAA.
	Magentas and Violets
30	Green absorption, BBC.
31	Green absorption, CCA.
32	Minus green, CCD.
33	Strong green absorption, CCB.
34	Violet, CDD.
34A	Blue separation — Kodak Fluorescence Process, DCC.
35	Contrast in microscopy, CDD.
36	Dark violet, CCC.
	Blues and Blue-greens
38	Red absorption, BCA.
38A	Red absorption. Increasing contrast in visual microscopy, BBB.
39	Contrast control in printing motion-picture duplicates (glass) AAA.
40	Green for two-olor photography (tungsten), CBC.
44	Minus red — Two-color general viewing, DDD.
44A	Minus red, DDD.
45	Contrast in microscopy, DDD.
45A	Highest resolving power in visual microscopy, CDC.
46	Blue projection (experimental), DDD.
47	Tricolor blue for direct color separation and from Kodak Ektacolor Film for Dye Transfer. Contrast effects in commercial photography. Tungsten and white-flame-arc tricolor projection, BBC.
47B	Tricolor blue for color separation from transparencies and from Kodak Ektacolor Film for Graphic Arts, BBB.
48	Green and red absorption, CBC.
48A	Green and red absorption, AAB.
49	Dark blue, BCB.
49B	Very dark blue, BBB.
50	Very dark blue. Mercury violet, CCC.
	Greens
52	Light green, AAB.

TRANSMISSION OF WRATTEN FILTERS (Continued)

FILTER DATA

No.	Description, use, and stability
53	Medium green, CCB
	Very dark green, AAA.
55	Stereo green, BBC.
56	Very light green, CBC.
57	Green for two-color photography (daylight), CBC.
57A	Light green, BBC.
58	Tricolor green for direct color separation. Contrast effects in commercial photography and microscopy, BBC.
59	Green for tricolor projection (white-flame-arc), BBB.
59A	Very light green, BBB.
60	Green for two-color photography (tungsten), BDC.
61	Green color separation from transparencies and Kodak Ektacolor Film. Tricolor projection (tungsten), ABC.
64	Red absorption (light), CDB.
65	Red absorption, ADB.
65A	Red absorption, CCD.
66	Contrast effects in microscopy and medical photography, DDC.
67A	Red absorption (light). Two-color projection, CDC.
	Narrow-band
70	Dark red. Infrared photography. Color separation for Kodak Ektacolor Film (with tungsten), ABC.
72B	Dark orange-yellow, CCC.
73	Dark yellow-green, ABB.
74	Dark green. Mercury green, BBC.
75	Dark blue-green, ACC.
76	Dark violet (compound filter), DDD.
77	Transmits 546 mμ mercury line (glass plus gelatin), AAA.
77A	Transmits 546 mμ mercury line (glass plus gelatin), AAA.
	Photometrics
78	Bluish. Photometric filter (visual), BAB.
78AA	Bluish. Photometric filter (visual), BAA.
78A	Bluish. Photometric filter (visual), AAA.
78B	Bluish. Photometric filter (visual), AAA.
78C	Bluish. Photometric filter (visual), BAA.
86	Yellowish. Photometric filter (visual), BBA.
86A	Yellowish. Photometric filter (visual), AAA.
†86B	Yellowish. Photometric filter (visual), BCA.
†86C	Yellowish. Photometric filter (visual), AAA.
	Light Balancing
80A	For Kodachrome Film, Daylight Type, and photographic flood lamps, ABA.
81	Yellowish. For warmer color rendering.
81A	Yellowish. For Kodak Ektachrome Film, Type B, with photographic flood lamps.
81B	Yellowish. For warmer color rendering.
81C	Yellowish. For Kodachrome Film, Type A, with flash lamps.
81D	Yellowish. For Kodachrome Film, Type A, with flash lamps.
81EF	Yellowish. For Kodak Ektachrome Film, Type B, with flash lamps.
82	Bluish. For cooler color rendering.
82A	Bluish. For Kodachrome Film, Type A, with 3200 K lamps.
82B	Bluish. For cooler color tendering.
82C	Bluish. For cooler color rendering.
83	Yellowish. For 16 mm Commercial Kodachrome Film and daylight exposure, BBB.
85	Orange. For Type A Kodak color films and daylight exposure, BAA.
85B	Orange. For Kodak Ektachrome Film, Type B, and daylight exposure, BAB.
	Miscellaneous
79	Photographic sensitometry. Corrects 2360 K to 5500 K, AAA.
87	For infrared photography. Absorbs visual.
87C	Absorbs visual, transmits infrared.
88A	For infrared photography. Absorbs visual.
89B	For infrared photography, AAA.
90	Narrow-band viewing filter for judging brightness scale of scenes, CCD.
96	Neutral filters for controlling luminance, AAB.
97	Dichroic absorption, AAA.
102	Correction filter for Barrier-layer photocell, ABA.
106	Correction filter for S-4 type photocell, AAA.

Wave length	Percent transmittance												
	No. 0 *	No. 1 *	No. 1A *	No. 2B *	No. 3	No. 3N5 *	No. 4	No. 6 *	No. 8	No. 8N5	No. 9	No. 11 *	No. 12 *
400	88.0	85.0	59.0	19.0	—	—	—	7.40	—	—	—	—	—
10	88.5	85.5	76.0	48.0	—	—	—	8.32	—	—	—	—	—
20	88.9	86.0	82.0	67.0	—	—	—	10.4	—	—	—	0.16	—
30	89.3	86.5	84.6	75.3	0.36	—	—	13.5	—	—	—	0.29	—
40	89.6	87.0	86.0	80.0	1.78	—	—	18.9	—	—	—	0.56	—
50	89.8	87.4	86.8	83.0	11.5	1.59	—	27.6	—	—	—	1.32	—
60	89.9	87.8	87.2	85.2	38.0	9.40	6.9	39.0	0.25	0.16	—	4.00	—
70	90.1	88.2	87.5	86.7	68.0	18.5	42.0	52.3	5.50	2.0	1.78	12.0	—
80	90.3	88.5	87.3	88.1	80.8	23.5	74.0	65.8	19.0	6.3	8.31	26.0	—
90	90.4	88.7	86.8	88.8	85.2	25.5	84.7	76.8	41.0	13.2	20.7	43.7	—
500	90.5	88.9	86.3	89.5	86.9	26.3	87.5	83.5	63.5	20.0	34.5	55.0	1.50
10	90.6	89.1	85.5	89.9	87.8	26.7	88.5	87.0	78.0	24.3	48.8	60.0	17.3
20	90.7	89.3	84.8	90.3	88.4	27.0	89.1	88.4	84.1	26.7	62.0	60.2	55.0
30	90.7	89.5	84.3	90.5	89.0	27.2	89.4	89.0	86.5	28.0	76.0	57.8	77.8
40	90.8	89.7	84.0	90.6	89.5	27.5	89.6	89.4	87.7	28.6	83.8	54.2	86.0
50	90.8	89.9	83.9	90.7	89.8	27.8	89.8	89.7	88.4	29.0	87.0	50.0	88.4
60	90.9	90.1	84.1	90.8	90.1	27.9	90.0	89.9	88.8	29.3	88.3	44.8	89.4
70	90.9	90.2	84.8	90.9	90.4	28.0	90.2	90.1	89.2	29.5	88.8	38.9	89.7
80	90.9	90.3	86.0	90.9	90.6	28.4	90.4	90.3	89.5	29.6	89.1	33.1	90.1
90	91.0	90.4	87.4	91.0	90.7	29.0	90.6	90.5	89.8	29.8	89.3	27.6	90.3
600	91.0	90.5	88.5	91.1	90.8	29.5	90.8	90.6	90.1	29.9	89.5	22.7	90.4
10	91.0	90.5	89.5	91.2	90.9	29.5	90.9	90.7	90.3	29.6	89.7	19.0	90.5
20	91.0	90.6	90.2	91.3	91.0	29.3	91.0	90.8	90.5	29.4	89.8	14.9	90.7
30	91.0	90.6	90.6	91.3	91.0	29.1	91.1	90.9	90.7	29.1	89.9	11.4	90.8
40	91.1	90.7	90.8	91.4	91.1	29.0	91.2	91.0	90.9	28.8	90.0	9.10	90.9
50	91.1	90.7	91.0	91.4	91.2	20.4	91.3	91.1	91.0	28.9	90.1	8.05	91.0
60	91.1	90.8	91.1	91.5	91.3	29.6	91.4	91.2	91.1	29.2	90.1	7.50	91.1
70	91.1	90.8	91.1	91.5	91.4	29.8	91.5	91.2	91.2	29.4	90.2	7.05	91.2
80	91.1	90.9	91.1	91.6	91.5	30.0	91.5	91.3	91.3	29.5	90.2	6.50	91.2
90	91.1	90.9	91.1	91.7	91.6	30.2	91.6	91.4	91.4	29.7	90.3	6.10	91.2
700	91.1	91.0	91.1	91.8	91.7	31.0	91.6	91.3	91.5	30.2	90.3	6.20	91.3
Luminous transmit.	90.8	89.9	85.9	90.5	88.3	27.4	87.8	87.5	82.7	27.0	76.6	40.2	73.8
Dominant wave lgth.	571.0	575.0	498.0	570.0	569.5	570.5	569.5	570.3	571.8	572.0	574.4	550.3	576.1
Excitation purity.	0.8	1.5	1.2	5.7	50.0	56.3	64.0	44.7	85.2	84.0	91.4	60.7	97.8

* Some transmission below 400 mμ. Consult the manufacturer.

TRANSMISSION OF WRATTEN FILTERS (Continued)

Wave length	Percent transmittance												
	No. 13 *	No. 15 *	No. 16	No. 18A *	No. 21	No. 22	No. 23A	No. 24	No. 25	No. 26	No. 29	No. 30 *	No. 31 *
400	—	—	—	—	—	—	—	—	—	—	—	48.6	13.8
10	—	—	—	—	—	—	—	—	—	—	—	47.4	14.5
20	—	—	—	—	—	—	—	—	—	—	—	48.5	16.4
30	0.18	—	—	—	—	—	—	—	—	—	—	50.1	25.5
40	0.50	—	—	—	—	—	—	—	—	—	—	49.4	42.7
50	1.35	—	—	—	—	—	—	—	—	—	—	43.0	50.2
60	4.08	—	—	—	—	—	—	—	—	—	—	26.5	40.4
70	11.0	—	—	—	—	—	—	—	—	—	—	13.8	22.6
80	23.5	—	—	—	—	—	—	—	—	—	—	5.00	8.20
90	39.0	—	—	—	—	—	—	—	—	—	—	0.63	1.85
500	50.8	—	—	—	—	—	—	—	—	—	—	—	0.12
10	55.2	1.00	—	—	—	—	—	—	—	—	—	—	—
20	56.5	16.0	3.00	—	—	—	—	—	—	—	—	—	—
30	55.0	52.1	22.0	—	—	—	—	—	—	—	—	—	—
40	51.0	70.7	48.0	—	2.50	—	—	—	—	—	—	—	—
50	46.0	84.3	69.5	—	29.0	0.25	—	—	—	—	—	—	—
60	39.2	87.5	79.5	—	65.0	19.0	—	—	—	—	—	0.10	—
70	32.0	88.7	84.0	—	80.6	60.0	11.0	—	—	—	—	10.0	—
80	25.1	89.3	86.3	—	85.4	81.0	47.0	4.55	—	—	—	45.0	—
90	18.2	89.7	87.8	—	87.3	87.0	69.6	37.3	12.6	2.90	—	76.0	0.63
600	13.5	90.0	89.0	—	88.1	88.5	82.7	72.3	50.0	30.0	—	87.4	26.0
10	9.60	90.1	89.6	—	88.7	89.0	85.8	82.9	75.0	63.2	10.0	89.5	67.2
20	6.40	90.2	90.0	—	89.0	89.5	87.2	86.4	82.6	78.9	45.3	90.2	84.0
30	3.66	90.3	90.2	—	89.5	89.8	87.9	87.8	85.5	84.0	71.4	90.5	88.1
40	2.20	90.4	90.3	—	89.9	90.0	88.5	88.5	86.7	86.1	82.7	90.7	89.8
50	1.58	90.5	90.4	—	90.2	90.1	89.0	89.0	87.6	87.2	86.6	90.8	90.2
60	1.74	90.6	90.5	—	90.4	90.2	89.4	89.3	88.2	88.1	88.4	90.9	90.4
70	2.62	90.6	90.6	—	90.5	90.3	89.6	89.7	88.5	88.5	89.4	91.0	90.5
80	3.55	90.7	90.7	—	90.5	90.4	89.8	89.9	89.0	88.9	90.0	91.1	90.7
90	4.48	90.7	90.8	0.25	90.6	90.5	90.0	90.2	89.3	89.2	90.3	91.1	90.8
700	5.25	90.8	90.8	1.20	90.6	90.6	90.2	90.3	89.5	89.5	90.4	91.1	91.0
Luminous transmit.	34.5	66.2	57.7	0.0014	45.6	35.8	25.0	17.8	14.0	11.7	6.3	26.6	12.9
Dominant wave lgth.	542.0	579.3	582.7	700.0	588.9	595.1	602.7	610.6	615.1	619.0	631.6	498.6$_c$	513.1$_c$
Excitation purity.	57.5	99.0	99.3	100.0	99.9	99.9	100.0	100.0	100.0	100.0	100.0	62.4	81.9

Wave length	Percent transmittance												
	No. 32 *	No. 33 *	No. 34 *	No. 34A *	No. 35 *	No. 36 *	No. 38 *	No. 38A *	No. 39 *	No. 40	No. 44 *	No. 44A *	No. 45
400	38.0	0.85	64.0	—	48.0	36.5	60.5	33.4	85.2	—	0.44	2.52	—
10	37.9	0.71	70.1	0.1	57.0	45.5	66.5	41.2	78.2	—	0.36	3.39	—
20	40.0	1.17	72.0	40.0	57.6	45.5	72.5	53.0	70.5	—	0.63	6.30	—
30	43.0	1.69	68.4	69.7	47.5	32.7	75.3	58.0	63.3	—	3.63	17.4	—
40	55.5	5.36	58.2	68.7	29.5	15.2	76.2	58.8	53.6	—	13.1	32.7	5.00
50	66.0	14.3	42.3	56.2	12.3	3.7	75.9	57.6	42.5	—	25.4	41.8	19.0
60	66.0	12.4	25.2	40.5	3.5	0.35	74.8	55.2	28.5	3.16	36.5	48.1	29.5
70	57.0	5.00	12.1	23.8	0.25	—	73.4	51.9	17.3	21.6	46.5	51.7	34.4
80	40.0	0.50	2.7	9.2	—	—	71.6	48.5	10.2	44.7	53.6	52.9	35.7
90	21.0	—	0.2	2.3	—	—	69.5	44.6	4.00	61.4	56.8	52.2	34.5
500	9.56	—	—	0.33	—	—	66.7	40.2	1.33	70.2	55.8	49.8	29.7
10	2.51	—	—	—	—	—	63.9	35.8	0.35	72.4	50.9	44.8	21.5
20	0.13	—	—	—	—	—	60.8	31.7	—	70.5	42.1	36.8	11.5
30	—	—	—	—	—	—	57.0	27.2	—	64.8	30.5	26.8	3.80
40	—	—	—	—	—	—	52.6	22.3	—	55.5	18.6	16.8	0.85
50	—	—	—	—	—	—	48.0	17.6	—	44.2	8.99	8.20	—
60	—	—	—	—	—	—	42.8	12.9	—	32.5	3.59	2.95	—
70	—	—	—	—	—	—	37.0	8.78	—	20.3	0.80	0.91	—
80	—	—	—	—	—	—	30.6	5.65	—	9.56	—	0.10	—
90	—	—	—	—	—	—	25.5	3.48	—	3.20	—	—	—
600	6.04	—	—	—	—	—	20.9	2.09	—	1.10	—	—	—
10	41.0	0.80	—	0.13	—	—	16.8	1.15	—	0.32	—	—	—
20	75.0	24.9	—	1.0	—	—	12.9	0.59	—	—	—	—	—
30	86.1	60.8	—	6.3	—	—	10.0	0.28	—	—	—	—	—
40	89.0	78.0	0.4	22.0	—	—	7.79	0.13	—	—	—	—	—
50	90.0	85.0	4.0	45.0	0.1	—	6.68	—	—	—	—	—	—
60	90.6	87.5	20.7	65.0	3.0	0.21	6.20	—	—	—	—	—	—
70	90.7	88.7	45.2	77.3	19.0	7.5	5.91	—	—	—	—	—	—
80	90.8	89.4	66.5	85.0	43.5	29.0	5.41	—	0.50	0.80	—	—	—
90	90.9	89.8	78.8	88.2	66.0	55.0	4.90	—	4.06	6.99	0.18	—	—
700	91.0	90.0	85.0	89.8	77.7	71.3	5.00	—	17.8	23.5	1.60	—	1.00
Luminous transmit.	12.5	5.2	1.3	2.9	0.45	0.25	42.5	17.3	1.2	33.6	15.6	14.4	5.2
Dominant wave lgth.	551.7$_c$	498.0$_c$	424.0	564.8$_c$	566.8	566.4$_c$	483.5	478.9	450.6	516.2	589.1	483.4	481.5
Excitation purity.	79.6	88.3	94.4	91.4	96.3	97.8	41.8	69.8	98.9	48.5	72.9	77.2	88.4

* Some transmission below 400 mμ. Consult the manufacturer.

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Wave length	Percent transmittance												
	No. 45A	No. 46 *	No. 47 *	No. 47B *	No. 48 *	No. 48A *	No. 49 *	No. 49B *	No. 50 *	No. 52 *	No. 53 *	No. 54	No. 55
400	—	1.20	7.80	16.0	0.96	5.65	3.30	1.70	0.45	2.18	—	—	—
10	—	0.60	17.4	29.5	3.16	10.0	4.28	2.00	0.39	1.51	—	—	—
20	—	0.80	34.0	43.6	8.25	16.0	6.93	3.55	0.59	0.80	—	—	—
30	1.00	5.98	47.0	50.0	15.0	21.0	11.2	7.00	2.63	0.44	—	—	—
40	8.81	19.0	50.3	47.2	22.6	25.0	18.9	13.0	8.90	0.41	—	—	—
50	17.4	30.1	48.3	36.0	30.3	26.2	25.6	17.4	14.0	0.69	—	—	—
60	20.9	33.8	43.4	25.0	33.2	22.9	24.0	14.8	12.3	1.45	—	—	0.20
70	21.6	32.1	36.2	13.2	29.6	16.5	15.7	7.60	5.36	2.70	0.10	—	2.90
80	20.5	27.0	28.5	4.5	22.4	9.55	6.93	2.76	1.55	4.90	0.7	—	13.1
90	18.0	20.2	19.6	1.3	14.1	4.27	2.14	0.40	0.10	8.50	2.14	—	34.2
500	14.4	11.1	0.36	0.17	7.30	1.58	0.46	—	—	13.3	4.47	—	53.4
10	10.1	4.39	—	—	2.64	0.48	—	—	—	18.2	7.24	0.10	67.0
20	5.60	1.66	—	—	0.50	—	—	—	—	23.7	10.7	0.31	69.3
30	2.52	0.35	—	—	—	—	—	—	—	28.5	14.0	0.64	65.1
40	0.4	—	—	—	—	—	—	—	—	32.1	16.6	0.89	56.7
50	0.10	—	—	—	—	—	—	—	—	33.1	17.3	0.93	45.0
60	—	—	—	—	—	—	—	—	—	31.0	15.4	0.62	33.1
70	—	—	—	—	—	—	—	—	—	25.6	11.4	0.21	20.7
80	—	—	—	—	—	—	—	—	—	19.1	6.90	—	9.00
90	—	—	—	—	—	—	—	—	—	12.6	3.60	—	2.70
600	—	—	—	—	—	—	—	—	—	7.78	1.41	—	0.40
10	—	—	—	—	—	—	—	—	—	4.17	0.40	—	—
20	—	—	—	—	—	—	—	—	—	2.34	0.15	—	—
30	—	—	—	—	—	—	—	—	—	1.38	—	—	—
40	—	—	—	—	—	—	—	—	—	0.80	—	—	—
50	—	—	—	—	—	—	—	—	—	0.54	—	—	—
60	—	—	—	—	—	—	—	—	—	0.36	—	—	—
70	—	—	—	—	—	—	—	—	—	0.27	—	—	—
80	—	—	—	—	—	—	—	—	—	0.23	—	—	0.66
90	0.20	0.25	—	—	—	—	—	—	—	0.19	—	—	6.90
700	2.24	0.85	—	—	—	—	—	—	—	0.17	—	—	27.8
Luminous transmit.	2.8	2.4	2.8	0.78	1.86	0.88	0.69	0.36	0.26	20.1	9.0	0.032	31.4
Dominant wave lgth.	477.6	470.4	463.7	479.8	466.5	458.0	457.9	455.5	455.9	553.3	551.1	546.1	530.2
Excitation purity.	89.7	94.9	95.8	69.1	96.1	98.3	98.9	99.3	99.4	77.3	89.7	97.0	68.4

Wave length	Percent transmittance												
	No. 56	No. 57	No. 57A	No. 58	No. 59 *	No. 59A *	No. 60	No. 61	No. 64 *	No. 65	No. 65A *	No. 66 *	No. 67A *
400	—	—	—	—	—	—	—	—	9.00	—	—	12.3	1.10
10	—	—	—	—	—	—	—	—	9.20	—	—	13.0	0.93
20	—	—	—	—	—	—	—	—	8.75	0.23	—	15.0	1.28
30	—	—	—	—	—	0.16	—	—	9.20	0.61	0.16	18.4	3.16
40	—	—	0.19	—	—	0.37	—	—	11.3	1.58	1.32	23.2	6.40
50	—	—	0.87	—	0.40	1.26	0.19	—	15.5	4.10	5.50	31.2	10.5
60	0.16	0.44	2.56	—	1.90	4.57	1.38	—	23.3	9.00	13.0	42.2	17.7
70	3.12	3.10	7.80	0.23	7.70	13.2	5.38	—	34.4	16.8	24.9	55.5	28.5
80	13.0	13.1	21.6	1.38	21.0	30.0	15.0	0.33	46.8	24.9	36.6	68.4	41.4
90	34.5	31.9	41.7	4.90	41.5	50.8	32.0	4.00	56.6	31.3	45.1	77.6	52.1
500	59.0	50.5	58.8	17.7	59.0	66.0	48.4	16.6	62.1	33.7	45.8	82.7	57.9
10	73.0	60.6	67.9	38.8	67.7	73.0	57.2	32.3	62.9	32.4	39.7	84.6	58.8
20	79.0	63.3	70.1	52.2	69.8	75.1	59.2	40.0	59.1	27.5	29.7	84.0	55.4
30	79.9	61.0	67.6	53.6	67.2	73.2	55.5	39.6	51.6	20.7	17.8	82.6	47.5
40	77.5	55.0	61.8	47.6	61.5	68.5	47.5	34.5	41.3	13.7	7.90	79.1	36.6
50	72.6	47.1	53.5	38.4	54.0	62.0	36.8	26.3	28.0	6.50	2.40	73.7	25.0
60	66.1	37.3	43.3	27.8	45.0	54.4	25.2	17.3	16.2	1.66	0.32	67.1	14.2
70	58.0	26.5	31.6	17.4	35.0	44.5	14.4	9.70	7.95	0.40	—	58.8	5.50
80	46.1	16.6	19.4	9.0	24.0	33.0	6.3	4.40	3.10	—	—	47.2	1.40
90	33.8	8.69	9.70	3.50	14.0	22.0	1.82	1.66	0.80	—	—	34.5	0.28
600	24.0	3.70	4.50	1.50	7.95	14.6	0.48	0.38	—	—	—	24.4	—
10	18.7	1.60	2.00	0.41	4.90	10.5	0.10	—	—	—	—	18.5	—
20	13.2	0.49	0.87	—	2.70	6.92	—	—	—	—	—	13.7	—
30	7.22	—	0.22	—	1.00	3.16	—	—	—	—	—	7.70	—
40	3.02	—	—	—	0.17	1.07	—	—	—	—	—	3.00	—
50	1.48	—	—	—	—	0.50	—	—	—	—	—	1.46	—
60	1.91	—	—	—	—	0.91	—	—	—	—	—	1.91	—
70	7.95	—	—	—	0.63	3.00	—	—	—	—	—	6.17	—
80	23.0	—	0.16	—	4.00	10.0	—	—	—	—	—	19.9	—
90	44.1	—	1.15	—	12.0	20.0	2.10	—	0.10	—	0.20	42.6	—
700	64.8	—	3.17	0.53	22.6	30.0	8.70	—	4.50	—	2.18	63.1	0.40
Luminous transmit.	52.8	32.5	37.2	23.7	38.7	45.8	26.1	16.8	25.0	9.6	9.8	58.3	22.4
Dominant wave lgth.	552.3	536.4	534.0	540.2	538.3	541.4	525.7	536.8	497.3	496.6	492.7	512.3	499.8
Excitation purity.	78.2	69.2	62.1	88.1	66.0	59.3	62.2	85.4	55.0	67.8	77.4	21.5	55.8

* Some transmission below 400 mμ. Consult the manufacturer.

TRANSMISSION OF WRATTEN FILTERS (Continued)

Wave length	Percent transmittance											
	No. 70	No. 72B	No. 73	No. 74	No. 75	No. 76 *	No. 77	No. 77A	No. 78 *	No. 78AA *	No. 78A *	No. 78B *
400	—	—	—	—	—	0.22	—	—	37.2	43.0	56.0	64.1
10	—	—	—	—	—	0.18	—	—	41.7	46.0	58.6	66.5
20	—	—	—	—	—	0.29	—	—	44.2	48.7	61.0	68.4
30	—	—	—	—	—	1.38	—	—	44.6	49.8	61.8	69.5
40	—	—	—	—	—	3.50	—	—	44.2	49.7	61.8	70.0
50	—	—	—	—	—	3.50	—	—	41.7	48.0	61.0	69.4
60	—	—	—	—	1.97	1.92	—	—	38.0	44.9	58.7	67.5
70	—	—	—	—	10.0	0.51	—	—	33.8	40.3	55.0	65.4
80	—	—	—	—	17.4	—	—	—	27.5	35.6	51.0	62.9
90	—	—	—	—	18.0	—	—	—	23.5	30.9	47.1	59.8
500	—	—	—	—	13.0	—	—	—	19.5	26.5	43.5	57.0
10	—	—	—	0.96	7.35	—	0.30	0.10	15.8	23.4	40.0	54.2
20	—	—	—	7.95	3.20	—	9.10	5.35	13.8	20.3	36.9	51.4
30	—	—	—	14.6	0.83	—	13.5	1.90	11.8	17.8	34.4	49.3
40	—	—	—	12.9	0.14	—	46.1	35.0	10.5	16.6	32.7	48.1
50	—	—	—	7.60	—	—	78.0	71.8	9.56	14.9	31.2	46.7
60	—	—	2.24	3.06	—	—	75.8	63.1	8.53	13.2	29.4	45.0
70	—	—	5.97	0.83	—	—	8.00	—	7.77	12.1	28.0	43.6
80	—	—	4.56	0.12	—	—	1.00	—	7.41	11.6	27.5	43.1
90	—	1.26	2.00	—	—	—	0.32	—	6.93	11.1	27.0	42.9
600	—	5.89	0.56	—	—	—	16.2	1.60	6.45	10.40	26.0	41.8
10	—	5.25	0.10	—	—	—	52.1	32.1	5.50	9.20	24.1	40.0
20	—	2.88	—	—	—	—	83.0	78.0	4.80	7.70	21.8	37.6
30	—	1.26	—	—	—	—	84.9	79.5	3.94	6.50	19.7	35.5
40	—	0.48	—	—	—	—	88.1	86.5	3.46	5.60	18.6	34.2
50	0.63	0.14	—	—	—	—	89.8	89.2	3.24	5.50	18.4	33.6
60	10.5	—	—	—	—	—	89.8	89.0	3.16	5.60	18.5	34.0
70	35.0	—	—	—	—	—	85.5	79.5	3.39	5.80	18.7	34.1
80	55.2	—	—	—	—	—	76.1	62.5	3.45	6.10	19.0	34.5
90	70.0	—	—	—	—	0.13	75.0	62.4	3.51	6.10	19.3	34.8
700	79.0	—	—	—	0.14	1.24	86.5	83.0	3.90	6.50	20.2	36.0
Luminous transmit.	0.31	0.74	1.3	4.0	1.9	0.046	32.3	25.5	10.7	15.8	31.6	46.7
Dominant wave lgth.	675.6	604.9	574.9	538.6	487.7	449.2	579.9	581.5	471.1	473.4	475.7	477.2
Excitation purity.	100.0	100.0	100.0	96.7	90.4	99.7	99.0	99.1	63.0	54.5	33.7	20.7

Wave length	Percent transmittance											
	No. 78C *	No. 79 *	No. 80A *	No. 81 *	No. 81A *	No. 81B *	No. 81C *	No. 81D *	No. 81EF *	No. 82 *	No. 82A *	No. 82B *
400	74.9	24.0	67.6	77.7	65.1	55.1	46.1	38.2	30.7	83.0	80.1	76.7
10	76.6	26.0	73.1	78.1	65.9	55.8	46.6	38.4	31.5	83.7	80.8	78.0
20	77.9	29.0	76.8	79.0	67.6	57.7	49.0	41.0	34.3	84.6	81.6	79.2
30	78.9	31.0	7.77	80.5	70.2	61.0	52.5	45.5	38.6	85.1	82.2	79.7
40	79.4	32.2	76.5	81.9	72.8	64.5	57.2	50.0	43.2	85.4	82.4	79.7
50	79.5	32.7	73.0	83.0	74.8	67.2	60.5	53.9	47.4	85.4	82.4	79.2
60	79.3	31.4	69.0	83.7	76.0	69.1	63.0	56.5	50.2	85.0	81.7	78.0
70	78.6	28.8	63.6	84.3	77.1	70.6	64.2	58.1	52.0	84.6	80.7	76.3
80	77.8	25.6	57.6	84.6	77.8	71.3	65.0	59.0	53.0	84.0	79.3	74.4
90	76.7	22.2	51.3	84.9	78.3	71.8	65.7	60.0	54.0	83.3	78.0	72.1
500	75.5	19.3	45.2	85.3	78.6	72.6	66.4	60.8	55.4	82.6	76.6	70.2
10	74.2	16.8	39.4	85.4	79.0	72.9	66.5	61.1	56.2	82.0	75.3	68.3
20	73.0	14.2	34.2	85.5	79.5	73.2	67.0	61.6	57.0	81.4	74.0	66.5
30	72.1	12.7	30.0	86.0	80.4	74.5	68.8	62.5	59.5	81.0	73.1	65.5
40	71.5	11.8	27.1	86.5	81.5	76.0	71.0	66.1	62.7	80.8	72.7	65.0
50	70.7	11.0	24.8	86.8	82.3	77.0	72.0	67.3	64.5	80.6	72.4	64.5
60	69.8	9.76	23.5	87.0	82.6	77.6	72.5	68.0	65.3	80.4	71.8	63.8
70	69.0	8.81	22.6	87.1	82.7	77.8	72.7	68.3	65.8	80.2	71.5	63.2
80	68.8	8.50	22.6	87.1	82.8	78.0	73.0	68.5	66.0	80.2	71.5	63.2
90	68.6	8.29	23.2	87.4	83.1	78.2	74.0	69.5	66.5	80.3	71.7	63.4
600	68.0	7.56	23.7	87.6	84.0	79.1	75.6	72.0	68.1	80.2	71.5	63.0
10	66.7	6.45	23.2	88.1	85.0	81.0	78.5	75.0	71.6	79.3	70.3	61.5
20	65.0	5.13	21.0	88.8	86.1	83.1	80.8	78.0	74.7	78.4	68.5	59.0
30	63.8	4.17	18.2	89.2	87.0	84.2	82.1	79.8	77.0	77.5	66.9	56.9
40	63.0	3.47	15.8	89.4	87.4	85.1	83.0	80.8	78.4	76.8	65.5	55.0
50	62.7	3.16	14.5	89.5	87.7	85.6	83.5	81.5	79.2	76.5	64.8	54.1
60	63.0	3.09	13.8	89.8	88.0	86.0	84.1	82.1	80.1	76.2	64.6	53.7
70	63.3	3.16	13.4	90.0	88.2	86.5	84.8	83.0	80.9	76.1	64.5	53.7
80	63.4	3.16	12.7	90.1	88.5	87.0	85.5	83.7	81.8	76.1	64.4	53.5
90	63.6	3.16	11.7	90.3	89.0	87.5	86.1	84.6	82.9	76.2	64.2	53.4
700	65.0	3.31	11.5	90.5	89.2	88.0	86.8	85.5	84.0	77.1	64.6	54.1
Luminous transmit.	70.4	11.3	28.4	86.8	82.0	76.9	72.0	67.4	64.0	80.7	72.5	64.6
Dominant wave lgth.	479.8	474.8	471.7	576.7	577.5	577.8	577.4	579.5	579.0	477.5	476.6	475.6
Excitation purity.	6.8	52.8	45.9	2.9	6.0	8.7	10.7	14.7	19.0	3.0	6.3	10.2

* Some transmission below 400 mμ. Consult the manufacturer.

TRANSMISSION OF WRATTEN FILTERS (Continued)

Wave length	Percent transmittance												
	No. 82C *	No. 83 *	No. 85 *	No. 85B *	No. 86 *	No. 86A *	No. 86B *	No. 86C *	No. 89B	No. 90	No. 96 *	No. 97	No. 102 *
400	73.4	13.5	6.0	1.59	0.50	8.00	20.0	44.0	—	—	4.28	—	1.12
10	75.0	13.1	18.0	9.32	0.81	12.2	26.1	55.0	—	—	4.91	—	0.96
20	76.4	13.5	28.4	15.5	1.55	16.7	31.6	62.0	—	—	5.50	—	0.89
30	77.2	14.1	33.4	19.0	2.88	21.5	37.5	66.6	—	—	6.17	—	0.96
40	77.2	15.6	36.2	20.8	5.50	27.8	44.0	70.8	—	—	6.92	—	1.23
50	76.6	17.8	38.1	22.1	9.10	34.2	50.1	74.3	—	—	7.50	—	1.86
60	75.2	21.0	40.4	24.3	13.5	40.4	55.4	76.8	—	—	7.81	—	3.23
70	73.2	25.5	43.0	27.5	17.8	45.0	59.5	78.7	—	—	8.15	0.22	6.45
80	70.7	30.2	45.3	30.9	21.3	48.7	62.5	80.2	—	—	8.47	0.43	14.0
90	68.1	35.8	47.2	34.3	24.5	51.2	64.6	81.2	—	—	8.60	0.39	21.6
500	65.7	43.5	48.9	38.3	26.8	52.8	66.0	81.7	—	—	8.73	0.15	30.7
10	63.5	46.3	49.2	40.7	27.9	53.4	66.4	81.9	—	—	8.85	—	41.4
20	61.5	47.2	48.2	40.6	28.6	53.7	66.6	82.0	—	—	8.90	—	51.3
30	59.9	48.3	48.3	40.7	30.4	55.0	67.6	82.4	—	—	9.01	—	59.4
40	59.1	49.6	49.2	41.6	32.5	56.5	69.0	83.0	—	—	9.07	—	64.2
50	58.3	51.8	51.0	43.2	35.0	58.5	70.2	83.5	—	—	9.20	—	66.7
60	57.2	56.5	55.8	47.1	41.2	63.0	73.0	84.6	—	9.00	9.30	—	66.3
70	56.2	65.0	64.5	56.0	53.0	70.9	78.1	86.8	—	30.5	9.20	—	63.0
80	56.1	75.5	75.0	68.1	67.5	79.0	84.0	88.9	—	34.3	9.19	—	58.0
90	56.0	83.0	83.0	78.1	76.5	85.2	87.5	89.9	—	25.2	9.54	—	51.9
600	55.0	87.3	87.2	85.0	85.0	88.1	89.3	90.6	—	16.1	9.64	—	45.2
10	53.0	89.3	88.9	88.0	88.1	89.8	90.3	91.0	—	11.3	9.73	—	37.8
20	50.2	90.4	90.0	89.6	89.6	90.5	90.7	91.1	—	7.40	9.56	—	30.5
30	47.4	90.8	90.5	90.3	90.4	90.8	90.9	91.2	—	2.91	9.27	—	25.0
40	45.2	91.0	90.7	90.7	90.7	91.1	91.1	91.3	—	0.76	9.10	—	20.6
50	44.1	91.1	90.9	90.9	91.0	91.2	91.2	91.4	—	0.29	9.07	—	17.5
60	43.6	91.3	91.0	91.0	91.1	91.3	91.3	91.5	—	0.41	9.00	—	15.2
70	43.5	91.5	91.0	91.2	91.2	91.4	91.4	91.6	—	2.30	9.13	—	13.7
80	43.1	91.5	91.0	91.3	91.3	91.4	91.5	91.6	0.10	9.52	9.08	0.44	12.8
90	42.8	91.5	91.0	91.3	91.3	91.5	91.6	91.6	1.58	28.5	9.21	5.02	12.1
700	43.5	91.5	91.0	91.3	91.3	91.5	91.6	91.6	11.2	51.9	9.52	18.7	12.0
Luminous transmit.	58.1	61.4	62.5	55.5	49.7	67.1	75.5	85.4	0.017	9.8	9.1	0.041	50.8
Dominant wave lgth.	477.2	581.5	587.7	585.7	585.7	581.7	579.6	577.6	700	583.1	572.4	555.0$_e$	564.9
Excitation purity.	14.5	55.4	30.3	48.0	69.7	37.1	24.1	9.0	100	100.0	12.1	48.0	80.0

Wave length	Percent transmittance												
	No. 106	CC-05R *	CC-10R *	CC-20R *	CC-30R *	CC-40R *	CC-50R *	CC-05B *	CC-10B *	CC-20B *	CC-30B *	CC-40B *	CC-50B *
400	—	81.0	73.0	61.5	51.6	42.5	36.4	87.0	85.5	82.2	80.2	77.0	74.1
10	—	81.0	72.4	60.0	50.0	40.0	33.9	87.5	86.4	84.0	82.5	80.3	78.4
20	0.10	81.0	72.0	58.6	48.2	38.2	31.9	87.7	87.2	85.0	84.0	82.2	80.7
30	0.20	81.1	71.6	57.7	47.0	36.8	30.5	88.0	87.5	85.3	84.3	82.5	81.1
40	0.35	81.2	71.5	57.2	46.4	36.0	29.7	88.1	87.5	85.0	83.5	81.3	79.8
50	0.58	81.4	71.6	57.2	46.4	36.1	29.6	88.1	87.2	83.9	81.9	78.7	76.6
60	0.98	81.7	72.4	58.5	47.5	37.5	31.0	87.9	86.4	82.5	79.5	75.9	72.9
70	1.5	82.3	73.7	60.6	49.9	40.0	33.6	87.5	85.3	80.3	76.2	72.0	67.9
80	2.3	82.8	74.9	62.0	52.0	42.5	35.9	87.0	84.0	77.8	72.5	67.5	62.7
90	3.5	83.2	75.8	63.5	53.9	44.8	37.9	86.2	82.4	74.2	68.3	62.3	56.6
500	5.2	83.3	76.6	64.6	55.2	46.1	39.4	85.2	80.5	71.2	63.8	56.7	50.1
10	7.7	83.0	76.1	64.0	54.5	46.0	38.5	84.4	78.6	67.7	58.7	51.0	44.5
20	10.7	82.4	74.9	61.5	51.6	42.5	35.0	83.5	77.0	64.0	54.4	46.0	38.6
30	15.1	81.6	73.5	59.4	48.5	38.5	31.5	82.6	75.2	61.5	50.7	41.6	34.1
40	20.2	81.2	72.5	57.8	46.5	36.6	29.4	82.1	73.9	59.5	48.3	39.0	31.3
50	25.7	81.1	72.4	57.1	45.6	35.6	28.7	81.5	73.0	58.0	46.6	36.9	29.5
60	31.0	81.4	72.8	58.0	46.9	36.4	29.7	81.4	72.7	57.5	45.9	35.9	28.6
70	35.6	82.5	74.5	60.6	49.2	39.2	32.7	81.4	73.0	57.9	46.3	36.1	28.7
80	43.2	83.9	77.3	65.0	54.6	45.0	38.6	81.9	73.9	59.3	47.9	37.8	30.5
90	53.8	85.7	80.7	71.0	61.8	53.5	47.6	82.7	75.1	61.6	50.3	40.8	33.4
600	65.6	87.6	84.0	77.0	70.5	64.0	58.7	83.4	76.3	63.5	53.0	43.5	36.0
10	77.0	89.0	86.5	82.0	77.8	73.0	69.8	83.6	76.7	64.5	54.6	44.7	37.8
20	82.8	90.0	88.9	86.2	83.5	80.8	78.3	83.5	76.5	64.3	54.4	44.3	37.5
30	86.0	90.6	89.9	88.1	87.2	85.1	84.2	83.2	76.6	63.1	53.2	42.5	35.6
40	87.6	91.1	90.5	89.8	89.2	88.0	87.5	82.8	74.5	61.6	51.5	40.2	33.7
50	88.7	91.2	90.8	90.5	90.3	89.5	89.2	82.5	74.0	60.6	50.3	39.0	32.4
60	89.5	91.3	91.1	90.8	90.6	90.4	90.1	82.5	73.8	60.1	49.5	38.4	31.8
70	90.0	91.4	91.3	91.0	90.9	90.8	90.7	82.3	73.3	59.6	49.0	37.7	31.0
80	90.5	91.6	91.5	91.2	91.1	91.0	91.1	82.0	72.8	58.6	48.2	36.5	30.0
90	90.8	91.7	91.7	91.4	91.4	91.3	91.1	81.9	72.5	58.1	47.2	35.4	29.0
700	91.0	91.9	91.9	91.5	91.5	91.4	91.2	82.2	73.0	58.5	47.5	35.6	29.0
Luminous transmit.	34.6	83.7	77.0	65.3	55.9	47.3	41.3	82.8	75.5	62.3	52.0	42.8	35.7
Dominant wave lgth.	589.4	605.0	597.8	604.2	605.8	605.5	608.5	459.0	462.0	460.0	461.0	463.2	462.5
Excitation purity.	95.2	2.0	4.7	8.5	12.3	17.3	21.4	2.8	6.3	13.2	20.2	27.7	34.2

* Some transmission below 400 mμ. Consult the manufacturer.

TRANSMISSION OF WRATTEN FILTERS (Continued)

Wave length	Percent transmittance											
	CC-05G *	CC-10G *	CC-20G *	CC-30G *	CC-40G *	CC-50G *	CC-05Y *	CC-10Y *	CC-20Y *	CC-30Y *	CC-40Y *	CC-50Y *
400	80.0	73.1	58.8	48.0	39.7	32.0	81.0	74.5	61.3	50.5	43.0	34.5
10	80.7	72.9	57.8	46.5	38.1	30.3	80.6	73.2	59.0	47.4	39.5	30.5
20	81.0	72.8	57.3	45.8	37.3	29.5	80.4	72.6	57.8	46.0	37.5	29.0
30	81.4	72.7	57.0	45.5	36.5	29.0	80.4	72.5	57.5	45.6	36.5	28.7
40	81.6	73.0	57.3	45.8	36.6	29.1	80.6	72.8	57.8	46.5	36.8	29.5
50	82.1	73.9	58.4	46.9	38.1	30.6	81.2	74.0	59.5	48.5	38.5	31.5
60	83.0	75.5	61.4	50.3	41.5	34.3	82.5	76.0	63.0	52.5	42.5	36.2
70	84.4	78.0	65.4	55.8	47.0	40.5	83.9	78.5	67.5	48.2	48.8	43.5
80	85.6	80.4	70.0	61.8	53.5	47.8	85.3	81.2	72.3	64.9	56.2	54.0
90	86.8	83.0	75.2	68.9	61.3	57.0	87.0	84.4	78.0	72.4	66.0	64.0
500	87.9	85.9	80.3	76.4	70.7	68.0	88.4	87.2	84.0	81.0	77.0	75.5
10	88.7	87.5	83.8	80.9	77.8	75.3	89.5	89.0	88.0	86.6	85.5	84.2
20	89.0	88.1	84.9	82.3	79.5	77.5	90.0	90.0	89.6	89.1	89.0	88.5
30	89.0	88.0	84.6	81.7	79.4	77.0	90.4	90.4	90.0	89.7	89.9	89.6
40	89.0	87.6	83.7	80.5	77.8	74.8	90.7	90.7	90.6	90.4	90.2	90.0
50	88.6	87.1	82.4	78.6	75.8	72.2	90.9	90.9	90.8	90.6	90.4	90.3
60	88.1	86.3	80.9	76.2	72.9	68.8	91.0	91.0	90.9	90.8	90.7	90.6
70	87.5	85.3	79.0	73.5	69.3	64.8	91.3	91.3	91.0	90.9	90.8	90.7
80	87.0	84.1	77.0	70.4	65.3	60.3	91.4	91.4	91.1	91.0	90.8	90.7
90	86.4	82.8	74.5	67.2	61.9	55.9	91.4	91.4	91.2	91.1	90.9	90.8
600	85.7	81.5	72.0	64.1	57.7	51.7	91.4	91.4	91.3	91.2	90.9	90.8
10	85.0	80.0	69.5	60.7	53.7	47.3	91.4	91.4	91.3	91.2	90.9	90.9
20	84.0	78.5	66.5	57.2	49.8	42.5	91.4	91.4	91.3	91.2	91.0	90.9
30	83.0	76.9	63.8	53.7	45.5	38.0	91.5	91.5	91.4	91.3	91.0	91.0
40	82.2	75.6	61.5	50.8	42.0	34.6	91.5	91.5	91.4	91.3	91.0	91.0
50	81.9	74.9	60.1	49.1	40.2	32.5	91.5	91.5	91.4	91.3	91.1	91.1
60	81.5	74.4	59.4	48.1	39.5	31.5	91.5	91.5	91.4	91.3	91.1	91.1
70	81.4	74.0	58.8	47.5	38.5	31.0	91.5	91.5	91.4	91.4	91.2	91.2
80	81.1	73.5	58.1	46.6	37.6	29.9	91.5	91.5	91.4	91.4	91.2	91.2
90	81.1	73.2	57.6	46.0	36.6	28.9	91.5	91.5	91.4	91.4	91.3	91.3
700	81.5	73.5	58.0	46.4	36.5	28.7	91.5	91.5	91.4	91.4	91.3	91.3
Luminous transmit.	87.2	84.5	77.8	72.2	67.7	63.3	90.4	90.1	89.1	88.2	87.4	86.9
Dominant wave lgth.	553.0	555.5	555.0	554.0	554.3	553.4	572.0	571.3	571.4	571.3	571.3	571.2
Excitation purity.	2.3	5.2	10.9	15.8	21.1	25.9	5.3	9.6	18.8	28.3	35.7	42.0

Wave length	Percent transmittance											
	CC-05M *	CC-10M *	CC-20M *	CC-30M *	CC-40M *	CC-50M *	CC-05C *	CC-10C *	CC-20C *	CC-30C *	CC-40C *	CC-50C *
400	87.6	86.6	85.6	84.2	82.3	80.9	87.3	86.0	83.9	82.3	80.4	78.8
10	88.2	87.7	86.6	85.7	84.6	83.6	88.2	87.5	85.2	84.5	83.4	82.7
20	88.6	88.0	87.0	85.9	85.2	84.4	88.7	88.1	86.5	86.0	85.3	84.8
30	88.7	88.0	86.9	85.6	84.4	83.6	89.0	88.6	87.5	87.0	86.3	85.9
40	88.7	87.9	86.0	84.7	82.5	81.4	89.3	89.0	87.7	87.3	86.6	86.1
50	88.6	87.5	84.9	82.8	80.0	78.1	89.5	89.1	87.8	87.5	86.6	86.0
60	88.4	86.5	83.1	80.0	76.1	73.7	89.6	89.1	87.7	87.3	86.4	85.7
70	87.8	85.2	80.8	76.4	71.3	68.0	89.7	89.0	87.5	87.0	85.8	85.2
80	87.0	83.6	77.9	72.1	65.8	61.7	89.7	89.0	87.2	86.5	85.3	84.3
90	86.0	81.8	74.4	67.0	60.0	55.0	89.7	89.0	87.0	86.0	84.4	83.4
500	85.0	79.7	70.5	61.7	53.7	48.1	89.6	89.0	86.5	85.2	83.5	82.3
10	83.8	77.5	66.7	56.5	47.7	41.6	89.6	88.7	86.0	84.4	82.4	80.8
20	82.7	75.3	63.4	52.0	42.8	36.3	89.5	88.5	85.2	83.5	81.1	79.2
30	81.8	73.7	60.5	48.6	39.0	31.9	89.4	88.0	84.3	82.4	79.6	77.3
40	81.3	72.5	58.6	46.6	36.7	29.8	89.2	87.5	83.4	81.0	77.7	75.0
50	81.2	72.2	58.0	46.0	36.0	29.1	88.9	87.0	82.3	79.0	75.3	72.2
60	81.5	72.8	58.3	46.5	36.7	29.7	88.5	86.1	80.5	76.7	72.7	69.0
70	82.5	74.6	60.5	49.8	40.2	32.3	88.0	85.0	78.5	74.0	69.3	65.0
80	84.0	77.3	64.9	55.6	46.2	39.0	87.5	83.8	76.1	70.9	65.4	60.5
90	85.8	80.8	70.6	63.3	54.9	48.7	87.0	82.5	73.9	67.5	61.6	55.8
600	88.0	84.5	77.1	71.6	64.9	59.9	86.4	81.0	71.2	64.1	57.6	51.3
10	89.3	87.0	82.2	79.2	74.9	70.7	85.5	79.5	68.5	60.4	53.4	36.2
20	90.2	88.9	86.1	84.1	81.4	79.2	84.5	77.9	65.5	56.7	49.2	42.3
30	90.6	90.0	88.7	87.4	86.0	84.5	83.8	76.3	62.7	53.1	45.0	38.0
40	90.8	90.5	90.0	89.3	88.7	87.6	83.3	75.1	60.8	50.4	42.0	34.9
50	91.0	90.7	90.5	90.2	90.0	89.7	82.8	74.4	59.5	48.8	40.2	32.9
60	91.1	91.0	90.8	90.8	90.4	90.4	82.5	74.0	58.5	48.0	39.4	32.0
70	91.2	91.2	91.0	91.0	90.7	90.7	82.4	73.6	57.9	47.2	38.6	31.0
80	91.3	91.3	91.2	91.1	91.0	91.0	82.0	73.0	57.5	46.0	37.5	29.9
90	91.4	91.4	91.4	91.3	91.3	91.3	82.0	72.8	57.4	45.5	36.7	29.1
700	91.5	91.5	91.5	91.5	91.5	91.5	82.5	74.0	58.5	46.4	37.3	29.8
Luminous transmit.	84.2	77.9	67.1	58.1	50.0	44.0	88.0	85.1	78.9	74.8	70.5	66.7
Dominant wave lgth.	541.0	547.5	551.2	550.0	550.3	551.2	489.2	487.5	486.5	486.2	486.1	485.5
Excitation purity.	3.5	7.4	14.4	21.5	28.3	34.0	1.6	4.1	8.9	12.8	17.5	20.2

* Some transmission below 400 mμ. Consult the manufacturer.

TRANSMISSION OF WRATTEN FILTERS (Continued)

Wave length	Percent transmittance				Wave length	Percent transmittance			
	No. 87	No. 87C	No. 88A	No. 89B		No. 87	No. 87C	No. 88A	No. 89B
700	—	—	—	11.2	30	74.1	17.8	84.7	88.8
10	—	—	—	32.4	40	77.7	28.2	85.5	89.0
20	—	—	—	57.6	50	81.4	41.0	86.1	89.2
30	—	—	7.4	69.1	60	84.0	53.8	86.6	89.4
40	0.10	—	32.8	77.6	70	85.4	61.6	87.2	89.6
50	2.19	—	56.3	83.1	80	86.8	69.2	87.5	89.8
60	7.95	—	69.2	85.0	90	87.8	74.1	87.8	89.9
70	17.4	—	74.2	86.1	900	88.4	78.5	88.0	90.0
80	31.6	—	77.6	87.0	10	88.8	81.5	88.2	90.1
90	43.7	—	79.7	87.7	20	89.1	83.6	88.4	90.2
800	53.8	0.32	81.4	88.1	30	89.1	85.1	88.6	90.3
10	61.7	3.20	82.6	88.4	40	89.1	86.0	88.8	90.4
20	69.2	8.90	83.7	88.6	50	89.1	87.0	89.0	90.5

* Some transmission below 400 mμ. Consult the manufacturer.