



commercial

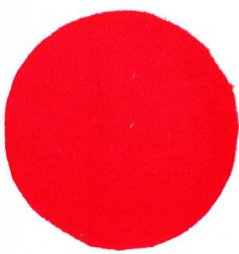
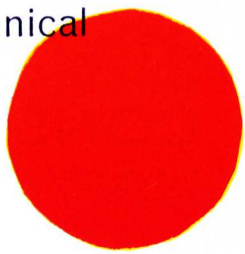
industrial

scientific

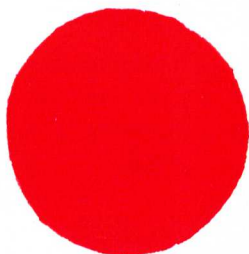
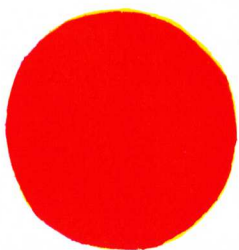
technical



amateur



KODAK LIGHT FILTERS



for black-
and-white
and colour
photography



IN CONSTANT USE



'Wratten'

*'Kodak' and
'Kodisk'*

All serious camera users—certainly all who depend on photography for a livelihood—will agree on the importance of the correct use of light filters.

The ability of filters to modify the rendering of tone values and the contrast of originals is exploited in widely different ways. Thus, the commercial photographer uses filters to bring out the grain in furniture or the pattern of a dress. The portrait photographer uses them to eliminate skin blemishes or emphasise colouring. The photomechanical worker uses them as part of the normal routine of block-making, especially, of course, in three- and four-colour work. The photomicrographer uses them to increase the effective contrast or bring out the detail of stained slides.

There is in fact no user of photography who can afford to do without the aid of filters in his daily work.

The main fields of technical photography are served by the extensive range of 'Wratten' filters. These have long been famous in the photographic world because of the great variety available and the brightness and purity of the colours. 'Wratten' filters consist of dyed gelatine, normally supplied cemented between optical glasses which have been surfaced to certain specified standards of accuracy. (For critical registration and resolution in photo-mechanical colour reproduction, especially where the multi-filtering technique is used, 'Kodak' Photomechanical Gelatine Filters are recommended.)

For fields of photography where technical requirements are less critical, the 'Kodak' and 'Kodisk' series of filters are available. These are made from glass coloured in the mass and optically polished; they are eminently suitable for use in pictorial and general photography. For amateur use the filters have the advantage that, being simpler in construction, they can be produced more economically to the high optical finish required; they also make possible the use of thin compact metal mounts.

The following pages describe briefly the range of 'Wratten', 'Kodak' and 'Kodisk' filters, the forms in which they are available, and how to order them. More detailed technical information is contained in the relevant Kodak Data Sheets and in the Kodak publication 'Wratten Light Filters' (see back page).

HOW TO CHOOSE

'Wratten' Filters are supplied as:

- (a) Gelatine film, or
- (b) Gelatine film cemented between glasses.

The glass is available in four qualities:—

'A' Quality Glass

Optical flats of the highest quality, surfaced with the same care and accuracy as lenses. Recommended for use with long-focus or large-aperture lenses, and when the subject matter is exacting in detail, as in some copying work.

'B' Quality Glass

Optical glass of good quality. Recommended for general photographic work and for most scientific purposes, such as spectrography and photomicrography.

Cine Quality Glass

Specially selected 'B' glass of the highest quality, suitable for use with cine cameras.

Non-Photographic Quality Glass

Plane glass, free from blemishes; suitable for visual photometry, microscopy and work of a similar nature where an image is examined visually, but not for use over a camera lens.

'Kodak' and 'Kodisk' Filters are supplied as solid glass only.

HOW TO ORDER

When ordering 'Wratten', 'Kodak' or 'Kodisk' Light Filters, please give the following details where applicable:

- (1) Number of filter. (See lists, pages 5–10.) For 'Kodak' and 'Kodisk' Filters, give colour. (See page 12.)
- (2) Whether filter is wanted in gelatine form or cemented in 'A', 'B', Cine or non-photographic quality glass.
- (3) Circle or square; give dimensions (side of square or diameter of circle). Gelatine filters are supplied as squares only.
- (4) If filter is required in mount, state outside diameter of lens barrel to be fitted. Please measure accurately—preferably in millimetres. (A convenient way of measuring the diameter of lens barrels is provided by the 'Kodak' Lens Gauge.)
- (5) If filter is required to fit a 'Kodak' Lens Attachment, give number of attachment.

Scheduled filter sizes are given on separate Price Supplement. Choose from this whenever possible (non-scheduled sizes carry an extra charge). If a filter is ordered which is not a stock line, it has to be specially cemented; this may involve a delay in delivery of up to 6 weeks.

THE KODAK RANGE OF WRATTEN FILTERS

'Wratten' filters are known by numbers. These numbers identify only the *colour* or light-absorbing quality of the filter, and do not refer in any way to its dimensions or form. The numbers are shown in the first column, and should always be quoted when you order.

The colours of the filters are given in the second column. A brief description and indication of the purpose for which each filter is used is shown in the third column.

'WRATTEN' NO.	COLOUR	DESCRIPTION AND USE
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0	Colourless
1A	Very faint pink
2B	Very faint yellow
2E	Faint yellow
3	Very light yellow
3N5	No. 3 + neutral density of 0.5
5	Light yellow
5N5	No. 5 + neutral density of 0.5
8	Yellow
9	Medium yellow
11	Light yellow-green
12	Deep yellow
15	Very deep yellow
16	Orange
18A	Visually opaque
18B	Very deep violet
22	Deep orange
23A	Reddish orange
25	Red
29	Deep red
30	Light magenta
32	Magenta
33	Medium magenta

For focusing.
Haze filter absorbing ultra-violet light. Used specially for colour photography.
Haze filter absorbing ultra-violet light strongly. Similar to 2B but absorbs more ultra-violet radiation.
Aerial photography.
Partial correction filter in motion-picture work. Enables a larger lens aperture to be used to reduce the depth of the field.
Aerial photography.
Correction filter in motion-picture work. Enables a larger lens aperture to be used to reduce the depth of field.
Correction filter. With evenly-sensitized panchromatic materials, reproduces colours in their correct relationship in daylight.
Correction filter. Tends to over-correct blue sky.
Correction filter. With evenly-sensitized panchromatic materials, gives correct rendering of colours in tungsten illumination.
Complementary filter. Strong over-correction when used outdoors. Renders blue in very dark tones. Strong haze penetration.
Contrast filter. Gives strong over-correction to sky when used in daylight and enhances detail in brick buildings, furniture, etc.
Contrast filter. Strongly over-corrects sky. Absorbs ultra-violet, blue and some green.
Ultra-violet work. Supplied only as glass filter.
Ultra-violet work. Supplied only as glass filter.
Contrast filter. Absorbs ultra-violet, blue and some green.
Contrast filter. Absorbs ultra-violet, blue and some green.
Filter for colour separation. Gives very strong over-correction to sky when used outdoors.
Filter for colour separation from transparencies.
Contrast filter used in photomicrography.
Complementary filter.
Contrast filter used in making contrast masks for colour separations.

34	Deep magenta
35	Very deep magenta
36	Very deep violet
38	Light blue
38A	Blue
44	Light blue-green
45	Blue-green
47B	Deep blue
50	Very deep blue
54	Very deep green
58	Green
59	Light green
61	Deep green
66	Very light green
70	Very deep red
72A	Very deep orange-red
72B	Very deep orange-red
73	Very deep yellow-green
74	Very deep green
75	Very deep blue-green
76	Very deep violet
77	Brownish yellow
77A	Brownish yellow
78A	Light blue
78C	Very light blue
80B	Bluish
81	Yellowish
81A	Yellowish
81B	Yellowish
81C	Yellowish
81EF	Yellowish
82	Bluish
82A	Bluish
82B	Bluish
82C	Bluish
85	Amber
85B	Amber
85C	Amber
86A	Yellowish
86C	Yellowish
87	Visually opaque
88A	Visually opaque
90	Olive
98	Deep blue
99	Deep green

Contrast filter. Absorbs green. Used with Eastman Colour Film.
Contrast filter used in photomicrography.
Contrast filter used in photomicrography.
Contrast filter. Corrects tendency for reds to reproduce too light when photographing with panchromatic material in tungsten light.
Contrast filter used in photomicrography.
Complementary filter used in photomicrography.
Contrast filter used in photomicrography.
Filter for colour separation.
Contrast filter used in photomicrography.
Contrast filter used in photomicrography.
Filter for colour separation.
Contrast filter.
Filter for colour separation from transparencies.
Contrast filter.
Monochromats.
Mercury-vapour lamp monochromat. Supplied only in special glass.
For photometric work.
For daylight-type colour film with 'Photoflood' lamps.
Used over lens to lower the effective colour temperature of light source.
Used over lens to raise the effective colour temperature of light source.
For 'Kodachrome' Type A Film in daylight.
For 'Ektachrome' Type B Film in daylight.
For use in daylight with colour films, balanced for use with clear wire-filled or foil-filled flashbulbs.
For photometric work.
For specialised infra-red work.
For general infra-red work.
Monochromatic viewing filter for visual use. Reduces the brightness of colours to assist study of tone values.
Mainly for use in making separation positives from 'Ektacolor' negatives and for the three-colour printing on 'Ektacolor' paper.

SPECIAL PURPOSE FILTERS

'Wratten' Neutral-Density Filters

These filters permit the reduction of light intensity by a definite ratio. They are distinguished by the prefix 'ND' which is followed by the density of the filter:

ND.0-1. ND.0-2. ND.0-3. ND.0-4. ND.0-5.
ND.0-6. ND.0-7. ND.0-8. ND.0-9. ND.1-0.
ND.2-0.

Other densities can be built up by combining two or more of the above; e.g. ND.3-0. can be arrived at by combining ND.1-0. and ND.2-0.

Such filters may be of value, under certain conditions, for the following purposes:—

- (1) to allow exposure control, on cameras (still or cine) with limited adjustments, when extreme-speed films are used in bright summer sunlight,
- (2) to permit flash pictures to be taken at reduced distances, or
- (3) to allow exposures to be made at larger lens apertures in order to obtain differential focusing.

Following are the percentage transmission and approximate factors of 'Wratten' Neutral-Density Filters.

DENSITY	PERCENTAGE TRANSMISSION	FACTOR
0.1	80	1½
0.2	63	1½
0.3	50	2
0.4	40	2½
0.5	32	3
0.6	25	4
0.7	20	5
0.8	16	6
0.9	13	8
1.0	10	10
2.0	1.0	100

'Wratten' Light-Balancing Filters

'Kodachrome' and 'Ektachrome' films are adjusted to give the best rendering of the subject when exposed under specified conditions of illumination (i.e. 'Kodachrome' Type A—3,400°K; 'Ektachrome' Type B—3,200°K). When it is not possible to operate lamps at their proper colour temperature, correction can be obtained by using one or more of the appropriate 'Wratten' Light-balancing Filters, series 81 or 82, to lower or raise respectively the effective colour temperature. (See Kodak Data Sheet CL-5.)

'WRATTEN' FILTER No.	EXPOSURE INCREASE IN STOPS	COLOUR TEMPERATURE OF SOURCE		Conversion Table for Light-Balancing Filters
		CONVERTED TO 3,200°K	CONVERTED TO 3,400°K	
+ 82C	1½	2490°K	2610°K	
82C + 82B	1½	2570°K	2700°K	
82C + 82A	1	2650°K	2780°K	
82C + 82	1	2720°K	2870°K	
82C	¾	2800°K	2950°K	
82B	¾	2900°K	3060°K	
82A	½	3000°K	3180°K	
82	½	3100°K	3290°K	
81	½	3300°K	3510°K	
81A	½	3400°K	3630°K	
81B	½	3500°K	3740°K	
81C	½	3600°K	3850°K	
81EF	¾	3850°K	4150°K	

'Kodak' Colour-Compensating Filters

These filters are used to make changes in the overall colour balance of pictures obtained with colour films, or to compensate for deficiencies in the spectral quality of the light by which colour films may be exposed.

The range consists of six series, each of six filters, comprising yellow, magenta and cyan, and red, green and blue. These filters are spaced according to density, and corresponding filters in different series are roughly comparable. The peak density of the filters is indicated by the two digits following the hyphen in the filter designation and the colour is indicated by the final letter (see table overleaf).

'Kodak'
Colour-Compensating
Filters (cont)

Filters suppressing
One Primary Colour

PEAK DENSITY	YELLOW SERIES (suppressing blue)	MAGENTA SERIES (suppressing green)	CYAN SERIES (suppressing red)
0.05	CC — 05Y	CC — 05M	CC — 05C
0.10	CC — 10Y	CC — 10M	CC — 10C
0.20	CC — 20Y	CC — 20M	CC — 20C
0.30	CC — 30Y	CC — 30M	CC — 30C
0.40	CC — 40Y	CC — 40M	CC — 40C
0.50	CC — 50Y	CC — 50M	CC — 50C

Filters suppressing
Two Primary Colours

PEAK DENSITY	RED SERIES (suppressing blue and green)	GREEN SERIES (suppressing blue and red)	BLUE SERIES (suppressing green and red)
0.05	CC — 05R	CC — 05G	CC — 05B
0.10	CC — 10R	CC — 10G	CC — 10B
0.20	CC — 20R	CC — 20G	CC — 20B
0.30	CC — 30R	CC — 30G	CC — 30B
0.40	CC — 40R	CC — 40G	CC — 40B
0.50	CC — 50R	CC — 50G	CC — 50B

Kodak
'Pola'-Screens

Filters of neutral grey which transmit plane-polarized light of all visible colours. They are used for darkening the sky in black-and-white and colour photographs without affecting the colour rendering of the foreground; for subduing oblique reflections when photographing through glass or water; for emphasizing texture in non-metallic surfaces (metallic surfaces require 'Pola'-Screens over lights as well as lens); and for reflection control in copying.

'Kodak'
Colour-Printing
Filters (Gelatine)

Full details of the filters mentioned above will be supplied on request.

These filters are for use in enlarger lamphouses or colour-printing apparatus where a filter is used between the light source and the negative. They are thicker than the normal lacquered gelatine filters. They are not intended for use on enlarger or camera lenses. 'Kodak' Colour-Printing Filters are available in the same densities as the CC range shown in the first table above and also in CP025C, CP025Y, CP025M and CP2B.

FILTER RECOMMENDATIONS

The following are recommended as providing a useful working minimum of 'Wratten' filters for the various types of photography shown; to these can be added other filters as experience suggests.

*For Commercial,
Industrial and General
Black-and-White
Photography*

'Wratten' filters No. 8, No. 11, No. 15, No. 25, and the 'Kodak' Pola-Screen. When 'Kodak' Lens Attachments are employed, the 'Kodak' Cloud, Green, Deep Yellow and Red filters may be used as approximate equivalents to the above 'Wratten' filters.

*For Medical
and Technical
Black-and-White
Photography*

The Technical Set of 'Wratten' filters consisting of the No. 25, No. 58 and No. 47B Colour-Separation Set together with No. 3, No. 8, No. 11, No. 15 and No. 29. Of these, the first three can also be used as contrast filters.

*For Colour
Photography*

No. 1A (Skylight Filter); No. 85 for 'Kodachrome' Type A Film in daylight; No. 85B for 'Ektachrome' Type B Film in daylight; No. 85C for use in daylight with colour films balanced for use with clear wire-filled or foil-filled flashbulbs; No. 80B for daylight-type colour film with Photoflood; No. 81C for 'Kodachrome' Type A or 'Ektachrome' Type B Film with clear flashbulbs; 'Kodak' Pola-Screen.

Special filter sets for laboratory and general scientific use are available: details on request.

*Non-Photographic
Filters*

Enquiries for filters for non-photographic purposes (e.g. for use in colorimetry, infra-red burglar alarms, etc.) should be addressed to Kodak Ltd., Industrial Sales Division, Kodak House, Kingsway, London, W.C.2.

'KODISK' LENS

ATTACHMENTS

Ideal for the amateur, this series of lens accessories is simple and inexpensive. The 'Kodisk' range includes Cloud Filter (Yellow), Green, Deep Yellow, Red and Haze filters, Close-up Lens and Lens Hood—all available in a range of sizes to fit lens mounts from 22 mm. to 37 mm. diameter. The attachments can be used either alone or in combination, as any one will fit any other of the same size.

Kodak 'Wratten' Filters, except Nos. 18A, 18B, 77 and 77A, are available in 'Kodisk' Lens Attachments in sizes to fit lens mounts from 22 mm. to 42 mm. diameter.

KODAK DATA SHEETS

and other Kodak Literature on Filters

- FT-1** 'Wratten' Filters: Selection and Factors.
- FT-2** 'Wratten' Neutral-Density Filters and 'Kodak' Photographic Step Tablets.
- FT-3** 'Wratten' Filter Sets for Scientific and Industrial Purposes.
- FT-4** Monochromats and Monochromatic Combinations from the 'Wratten' Filter Range.
- FT-6** Kodak 'Wratten' Filter Colour-Separation Set Nos. (25, 47B, 58).
- FT-7** Kodak 'Wratten' 29, 47B, 61, Colour-Separation Set.
- FT-8** 'Wratten' Filters Nos. 8, 9, 11, 15 and 25.
- FT-9** 'Wratten' Ultra-Violet Filters Nos. 2B, 18A, 18B. 'Wratten' Infra-Red Filters Nos. 87, 88A.
- CL-3** Filters for 'Ektachrome' and 'Kodachrome' Films.
- CL-5** Colour Temperature.
- EQ-3** 'Kodak' Combination Lens Attachment System.

The above are free on request.

'Wratten' Light Filters

A comprehensive reference manual of over 80 pages on the selection and use of light filters for photographic, industrial and scientific purposes. The manual includes absorption curves and other data. *Price 12/6*

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