# FOMAPAN ACTION 400
# DEVELOPING INSTRUCTIONS

Foma B&W film is compatible with all major processing systems. Recommended developing times are for normal contrast negatives (based on intermittent agitation.) All developing times are standardized for 68°F / 20°C. Your developing time may vary based on environment and equipment used.

| DEVELOPER | DILUTION | TIME @ 68°F / 20°C |
|---|---|---|
| Arista® 76 Powder | Stock | 7 - 8 |
| Arista® 76 Powder | 1:1 | 12 - 13 |
| Arista® Premium Powder | Stock | 7 1/2 |
| Arista® Premium Powder | 1:1 | 8 1/2 |
| Arista® Liquid Film Developer | Working Solution | 8 |
| Arista® Premium Liquid Developer | 1:9 | 8 |
| Marathon® Film Developer | 1:9 | 6 1/2 |
| Ilford ID-11, Kodak D-76 | Stock | 7 - 8 |
| Ilford ID-11, Kodak D-76 | 1:1 | 12 - 13 |
| Kodak XTOL | (Straight) | 7 |
| Kodak TMAX Developer | 1:4 | 7 - 8 |
| Kodak HC 110 | 1:31 | 6 1/2 |
| Agfa Rodinal | 1:25 | 5 1/2 |

Recommended Agitation: Agitate continuously for first 30 seconds of development, then provide agitation of 5 to 7 inversion cycles for 5 seconds every 30 seconds for remainder of development time. Where continuous agitation is used for rotary processor, reduce the developing times by 15%.

Development times may need adjusting to suit individual processing systems and working practices. If an established system is producing good results, adjust the recommended development times until the desired contrast is obtained.

This material will be replaced if found defective in manufacture, labeling or packaging. Except for such replacement, this product is sold without warranty or other liability. Developer and film manufacturers can and do change their product specifications from time to time and the development times may change as a result.

# FOMAPAN 400 Action

BLACK-AND-WHITE NEGATIVE FILM

### In general

FOMAPAN 400 Action is a panchromatically sensitized, black-and-white negative film designed for taking photographs under unfavourable light conditions or using short exposure times. The film meets high requirements for low granularity, good resolving power and good contour sharpness. FOMAPAN 400 Action has a nominal speed rating of ISO 400/27°, but due to its wide exposure latitude the film gives good results even when overexposed by 1 EV (exposure value) (as ISO 200/24 °) or underexposed by 2 EV (as ISO 1600/33°) without any change in processing, i.e. without lengthening the development time or increasing the temperature of the developer used.

To make prints or enlargements, Extrabrom- and Fomaspeed-type enlarging papers are recommended; however, all sorts of black-and-white enlargement papers can be used.

### Speed

ISO 400/27°, 27 ° ČSN

### Schwarzschild effect

| *Exposure (seconds)* | *1/1000–1/2* | *1* | *10* | *100* |
|---|---|---|---|---|
| Lengthening of exposure | 1x | 1,5x | 6x | 8x |
| Correction of aperture number | 0 | -1 | -2,5 | -3 |

### Processing

Safelighting

Total darkness or infrared light; for a short time an indirect safelighting can be used (using e.g. an Agfa 108 filter with 15 Watt lamp at a distance of not less than 75 cm.

Development

FOMAPAN 400 Action can be processed in all common negative developers. Recommended development times are shown in the table below (the development times are related to development in a spiral developing tank - agitation or turning over continuously during the first 30 seconds, then during the first 10 seconds IN every minute). In this way, medium-contrast negatives can be obtained.

| *Developer* | *Development time (minutes)* | |
|---|---|---|
| | *20 °C* | *30 °C* |
| Fomadon LQN (1+10) | 9 – 10 | 4 |
| Fomadon R09 (1+40) | 9 – 10 | – |
| Fomadon P | 10 – 11 | 6 |
| Fomadon Excel | 7 | 2 |
| Kodak Xtol | 7 | 2 |
| Ilford Microphen | 8 – 9 | 2,5 |
| Ilford Perceptol | 9 – 10 | 4 |
| Ilford ID 11 stock / Kodak D76 | 7 – 8 | 3,5 |
| Tetenal Emofin Liquid | 6 – 7 | – |

When the development time has elapsed, the film is recommended to be shortly rinsed in distilled water or dipped in a 2 % acetid acid solution for 10 seconds.

Fixing

At a temperature ranging from 18 to 25 °C for 10 minutes in any common type of an acid fixing bath, or for at least 3 minutes in Fomafix rapid fixer.

Washing

The film should be washed in running water: for 30 minutes and 15 minutes the temperature of water being below 15 °C and over 15 °C respectively.

It is recommended to finish the processing with the film being rinsed in distilled water, or dipped in a wetting agent solution.

### Storage

Unexposed films should be stored in the original packaging in a cool, dry place (temperature ranging from 5 to 20 °C, relative humidity from 50 to 60 %), out of reach of harmful vapours, gases and ionizing radiations. Films stored in a refrigerator and a freezer should be acclimatized to room temperature for approx. 2 and approx. 6 hours respectively. Exposed films should be processed as soon as possible.

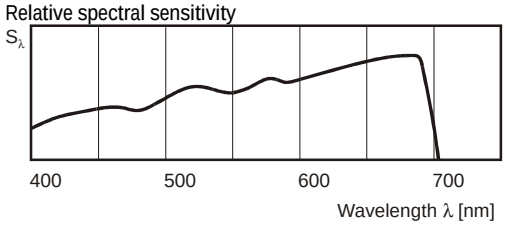
### Packaging

FOMAPAN 400 Action is available in the following sorts:

- 120 rollfilm 60 mm wide, exlusively on a 120 spool
- double-edge perforated 35 mm film in 135-36 cartridges for 36 exposures 24x36 mm; bulk lengths of 17, 30,5 and 50 m in a darkroom packaging

Other sizes are subject of an agreement with the manufacturer.

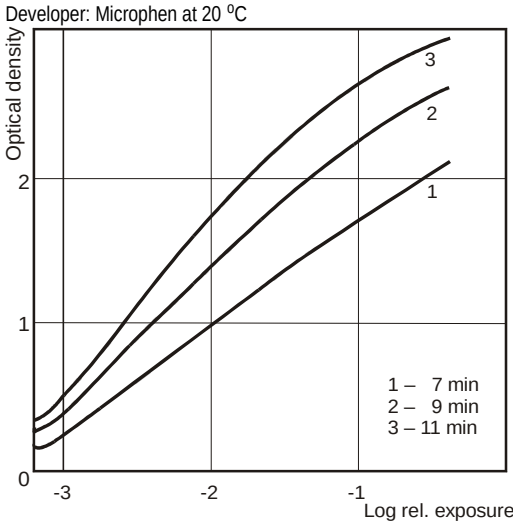
Relative spectral sensitivity



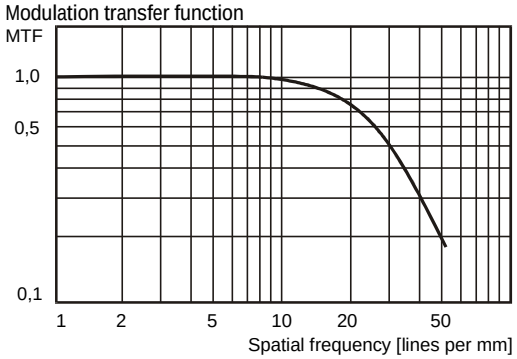

Characteristic curves

Exposure: Daylight (5500 K), 1/20 s

Developer: Microphen at 20 °C




Modulation transfer function




### Resolving power

90 lines per mm

### Granularity

RMS = 17,5 (Microphen at 20 °C, developed to $\overline{G}$ = 0,6.
Measured at D = 1,0.

### Base

The following bases are used for manufacturing the particular sorts of the film:

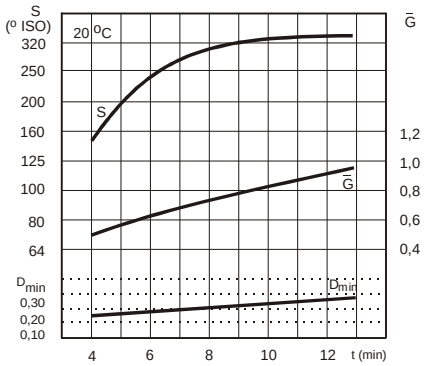
- 120 rollfilm - a bluish polyester base 0,1 mm thick, furnished with a matted colour backing which will decolourize during processing. The backing has anti-halation and anti-curling properties and prevents the incidence of Newton rings during enlarging.
- 35 mm film - a gray or gray-blue cellulose triacetate base 0,135 mm thick.

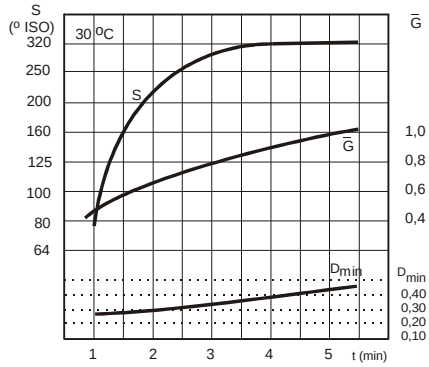
The product has been produced and marketed in conformity with a quality system according to the international standard ISO 9001.

# DEVELOPMENT CURVES FOR FOMAPAN 400 Action

### Ilford Microphen developer

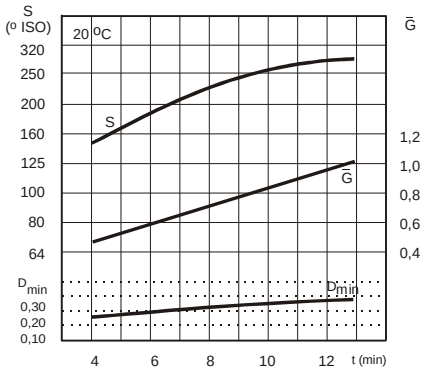
$D_{min}/S/\overline{G}$ – development time curves at 20 and 30 °C
- daylight Tc = 5500 K
- spiral developing tank - agitation or turning over continuously during the first 30 seconds, then during the first 10 seconds in every minute.

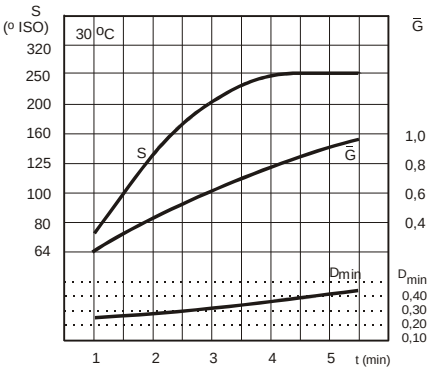



### Ilford ID 11–stock
### Kodak D 76 developer

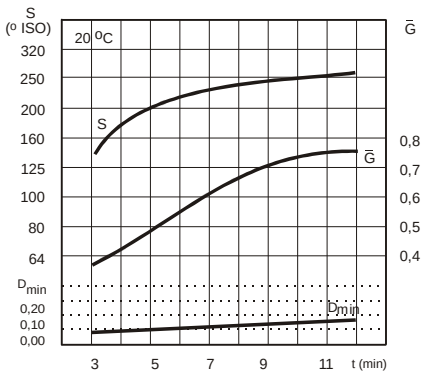
$D_{min}/S/\overline{G}$ – development time curves at 20 and 30 °C
- daylight Tc = 5500 K
- spiral developing tank - agitation or turning over continuously during the first 30 seconds, then during the first 10 seconds in every minute.

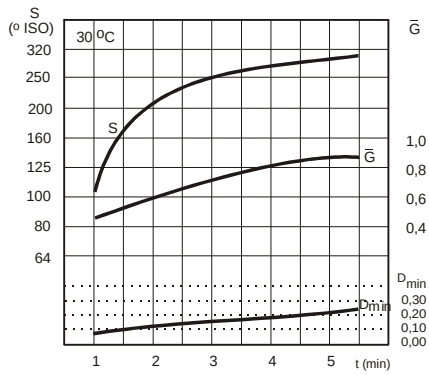



### Fomadon Excel
### Kodak Xtol developer

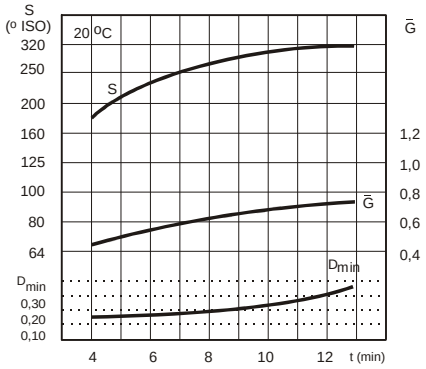
$D_{min}/S/\overline{G}$ – development time curves at 20 and 30 °C
- daylight Tc = 5500 K
- spiral developing tank - agitation or turning over continuously during the first 30 seconds, then during the first 10 seconds in every minute.

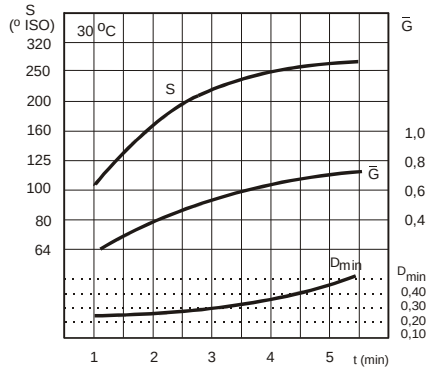



### Fomadon LQN developer (1+10)

$D_{min}/S/\overline{G}$ – development time curves at 20 and 30 °C
- daylight Tc = 5500 K
- spiral developing tank - agitation or turning over continuously during the first 30 seconds, then during the first 10 seconds in every minute.



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