

# 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, Fomabrom- 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:** infrared light or total darkness

### 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+50)	11 – 12	–
Fomadon P	10 – 11	6
Fomadon Excel	7	2
Kodak Xtol	7	2
Iford Microphen–stock	8 – 9	3.5
Iford Perceptol–stock	9 – 10	4
Iford ID 11/ Kodak D76–stock	7 – 8	2.5
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 % acetic 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 25 °C, relative humidity from 40 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.

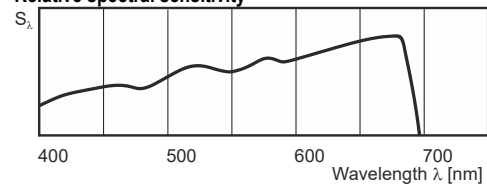
### Packaging

FOMAPAN 400 Action is available in the following sorts:

- 120 rollfilm 60 mm wide, exclusively on a 120 spool; identification edge markings: „ULTRA 400“
- double-edge perforated 35 mm film in 135-36 and 135-24 cartridges for 36 and 24 exposures 24x36 mm; bulk lengths of 17, 30.5 and 50 m in a darkroom packaging; identification edge markings: „FOMAPAN 400“ or „ULTRA 400“
- sheet film (for large-format cameras) sized 10 x 15, 13 x 18 and 18 x 24 cm in a box of 50 sheets. Orientation emulsion side of the film - is determined by a notch located on the right upper corner of the short side of the film format.

Other sizes are subject of an agreement with the manufacturer.

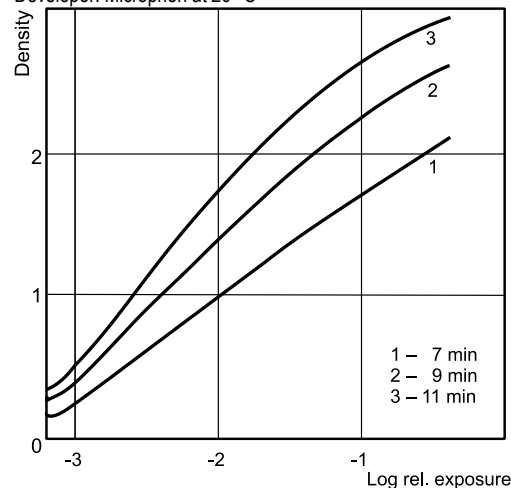
### Relative spectral sensitivity



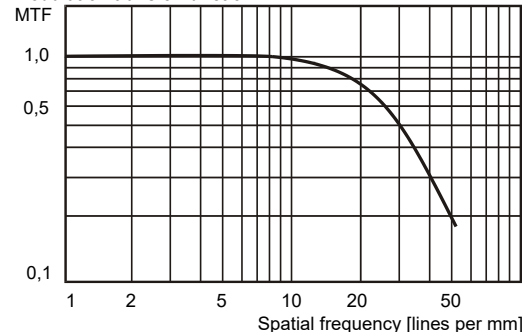
### Characteristic curves

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  $\gamma = 0.6$  (measured at  $D = 1.0$ ))

### Base

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

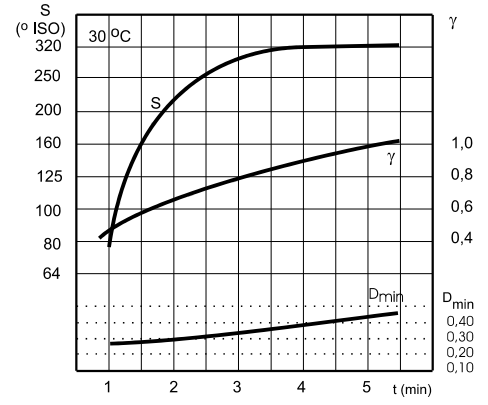
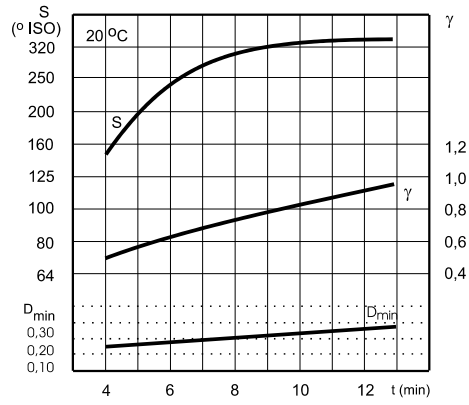
- 120 rollfilm - a clear polyester base 0.1 mm thick, furnished with an antihalo colour backing which will decolourize during processing.
- 35 mm film - a gray or gray-blue cellulose triacetate base 0.125 mm thick,
- sheet film - a clear polyester base 0.175 mm thick furnished with an antihalo colour backing which will decolourize during processing.

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

# DEVELOPMENT CURVES FOR FOMAPAN 400 Action

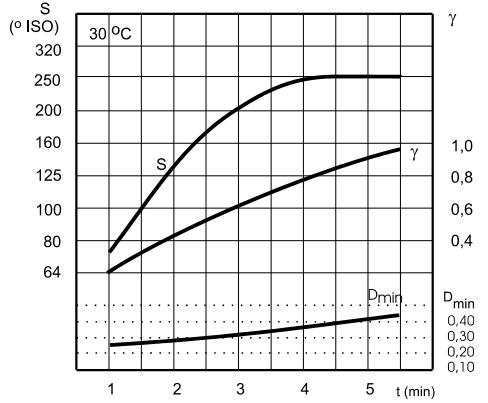
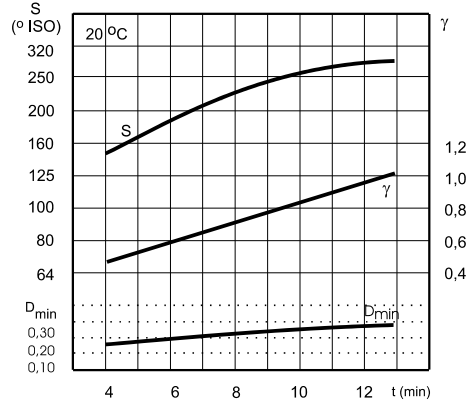
## Iford Microphen developer

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



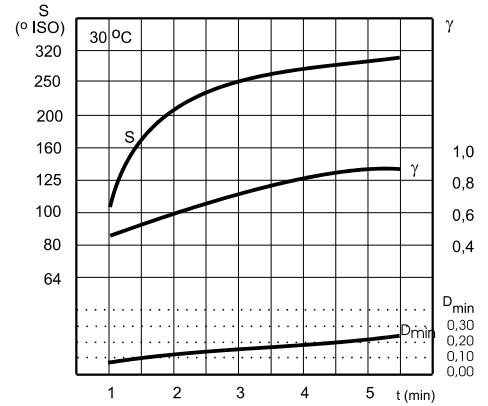
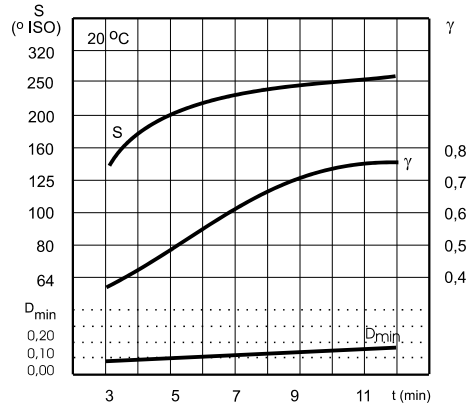
## Iford ID 11-stock Kodak D 76 developer

$D_{min}/S/\gamma$  – development time curves at 20 and 30 °C  
 - daylight  $T_c = 5500$  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

$D_{min}/S/\gamma$  – development time curves at 20 and 30 °C  
 - daylight  $T_c = 5500$  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)

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

