

# FOMAPAN R

## BLACK-AND-WHITE REVERSAL FILM

### In General

FOMAPAN R is a panchromatic sensitized black-and-white reversal film intended for taking black-and-white transparencies and/or making movies. From the shape of the characteristic curve it is evident that the film is characterized by very good differentiation of fine gray shades both in areas of highlights and shadows. In the areas of normal exposures, the linear part of the characteristic curve shows the gradation of 1,1. The spectral sensitisation of FOMAPAN R is designed for to true transfer colour tones into the gray scale when exposed in daylight, and simultaneously to make full use of the film speed when exposed in artificial light.

Due to a very efficient antihalo layer, situated between the base and emulsion layers, the film features very good resolving power and high contour sharpness. The antihalo layer will decolorize during processing.

### Speed

The film has a nominal speed rating of ISO 100/21° when processed in R-100 Process. Other processes can cause deviations from the nominal film speed. It is, therefore, recommended that the real film speed be checked by trial tests in such cases.

### Processing in R-100 Process

	Process steps	Time (minutes)	Temperature (°C)
1	First development FOMADON LQR (1+10)	9 – 10*	20 ± 0,5
2	Washing (running water)	10	20 ± 3
3	Bleaching (FB-2)	5	20 ± 0,5
4	Washing (running water)	5	20 ± 3
5	Cleaning bath	3	
6	Washing (running water)	5	20 ± 3
7	Second exposure (or reversal bath)	2x 30 sec (5)	
8	Washing (running water – after the reversal bath only)	10	20 ± 3
9	Second development FOMADON LQR (1+10)	9	20 ± 0,5
10	Washing (running water)	10	20 ± 3
11	Fixing (FU-5)	9	20 ± 3
12	Washing (running water)	30	20 ± 3
	Total processing time (excluding drying)	100–102 (110–112)**	

### Note:

\*development time depends on the alternatives of processing procedure used  
 \*\* information in parentheses is valid in case of reversal bath application

### Safelighting

FOMAPAN R is processed at total darkness or at infrared illumination up to operation No. 6 inclusive (washing before re-exposure).

### Storage

Unexposed films should be stored in the original packaging in a dry and cool place (at temperatures ranging from 5 to 25 °C and relative humidities ranging from 40 to 50 %), out of reach of harmful vapours, gases and ionizing radiation. Films stored in a refrigerator and a freezer should be adjusted to room temperature before using for about 2 and 6 hours respectively.

Exposed films should be processed as soon as possible. In cases this condition cannot be kept, the films should be stored at lower temperatures (4 to 18 °C) and relative humidities less than 60 %, out of reach of harmful vapours, gases and ionizing radiation.

Processed films should usually be stored at temperatures up to 21 °C and relative humidities ranging 40 to 60 %. For a long-term storage (e.g. in archives), special regulations of corresponding institutions should be adhered to.

### Packaging

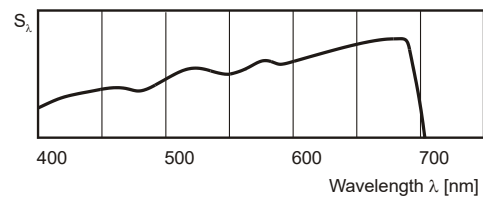
FOMAPAN R is produced and supplied in the following sorts:

- in the width of 16 mm one-edge perforated, in the length of 30.5 m; perforation type: 1R-3000 (long pitch)
- in the width of 16 mm both-edge perforated, in the length of 30.5 m; perforation type: 2R-3000 (long pitch)
- in the width of 16 mm, type 2x8 mm (standard), in the length of 10 m; perforation type: 2R-1500

- in the width of 16 mm, type 2 x DS 8 mm (super), in the length of 10 m; perforation type: 5R-1667 (long pitch)
- Usable lengths of the type 2x8 mm (Standard, DS 8) are by its standard length of 10.5 m the following ones:
- 7.5 meters when loading the film into the recording camera by dim light
  - 10.5 meters when loading the film into the recording camera in darkness

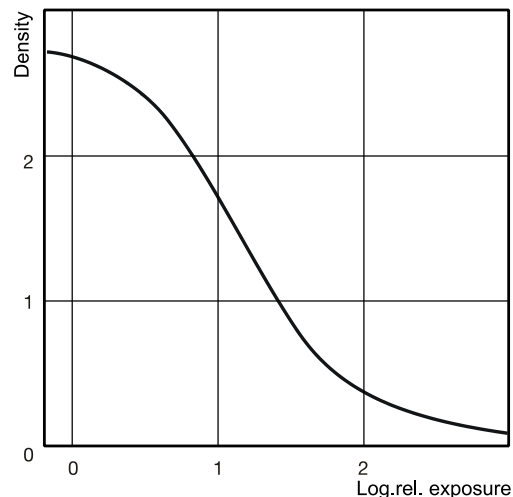
- both-edge perforated 35 mm film in 135-36 cartridge for 36 slides of 24x36 mm or as bulk length goods in customary lengths.

### Relative spectral sensitivity

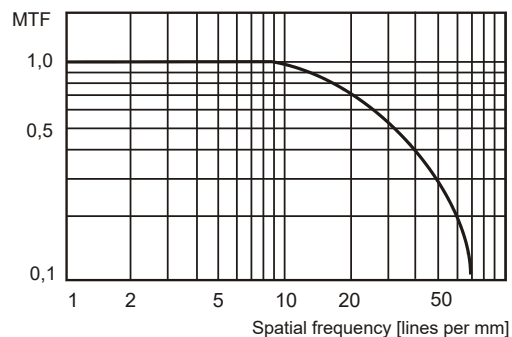


### Characteristic Curves

Exposure: Daylight (5500 K), 1/20 s  
 Process R-100



### Modulation transfer function



### Resolving power

115 lines per mm

### Granularity

RMS = 13.0. Measured at  $\gamma = 1.1$ . Process R-100.

### Base

FOMAPAN R is usually produced on a cellulose triacetate safety film base 0.125 mm.

# PROCESS R-100

## FOR PROCESSING OF FOMAPAN R BLACK-AND-WHITE REVERSAL FILMS

### In general

The Process R-100 is an analogy to classic processes for black-and white reversal materials. Using this process it is possible to process also the black and white negative films (FOMAPAN 100, 400, etc.) manually or mechanically; preferably the roll films or the sheet films, which are in the final form of slides comparably transparent as the classic reversal films (Fomapan R). It is intended both for the manual processing in dish/tank and for the machine processing in developing machines. Both in the first and the second development the commonly available developer Fomadon LQR is used and recommended for optimum results.

If the developing machine used does not allow to provide the second exposure, a reversal bath formulated below should be applied (similar to E-6 Process).

### R-100 Process scheme

	Process steps	Time (minutes)	Temperature (°C)
1	First development FOMADON LQR (1+10)	9 – 10*	20 ± 0,5
2	Washing (running water)	10	20 ± 3
3	Bleaching (FB-2)	5	20 ± 0,5
4	Washing (running water)	5	20 ± 3
5	Cleaning bath	3	
6	Washing (running water)	5	20 ± 3
7	Second exposure (or reversal bath)	2x 30 sec*** (5)	
8	Washing (running water – after the reversal bath only)	10	20 ± 3
9	Second development FOMADON LQR (1+10)	9	20 ± 0,5
10	Washing (running water)	10	20 ± 3
11	Fixing (FU-5)	9	20 ± 3
12	Washing (running water)	30	20 ± 3
	Total processing time (excluding drying)	100–102 (110–112) **	
<b>Note:</b> */ developing time depends on the way of processing used **/ information in parentheses is valid in case of reversal bath application ***/ re-exposure to be done in the developing tank using a 100 W bulb in a distance of 1 m in water and with the film moving (turning the spiral with the film) – 30 sec from both sides safelighting (step 1 – step 6) – total darkness or infrared light			

### Composition of working solutions

Reversal bath		Bleaching FB-2	
Water	900 ml	1	Potassium dichromate 5,0 g
Calgon (M19)	1,5 g	2	Sulfuric acid conc. 10 ml
or Chelaton III	5,0 g	3	Water to make 1000 ml
Tin dichloride	1,65 g		
p-aminophenol hydrochloride	0,66 g		
Sodium hydroxide	4,8 g		
Acetic acid 60%	11,0 ml		
Fixer FU-5		Cleaning bath FB-3	
Natrium thiosulfate 5 H <sub>2</sub> O	250,0 g	1	Potassium disulfite 50,0 g
Potassium disulfite	25,0 g	2	Water to make 1000 ml
Water to make	1000 ml		
<b>Note:</b> To prepare processing solutions, distilled or (if not available) at least boiled water is recommended.			

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