

INDUX R4

INDUSTRIAL X-RAY FILM

General information

INDUX R4 is an industrial radiographic film intended for non-destructive material testing using X- or gamma radiation. INDUX R4 is a medium-speed, high-contrast, extremely fine-grain film suitable for radiography with or without lead screens. It is an ideal film for most standard applications. INDUX R4 corresponds with the class C3 classification according to EN 584-1 standard and according to ASTM E 1815 standard with class I.

Applications

INDUX R4 should be used at low voltages for the radiography of thin-to-medium thick-walled light metal parts/ products. At higher voltages the film is suitable for the testing of thick-walled light metal or thin-walled steel parts/products. With high-energy gamma rays the film is suitable for the radiography of thick-walled dense metal parts/products.

Packaging forms

daylight packaging (FOMAPAK) – one-sheet vacuum-sealed packaging with lead screens of 0,025 or 0,1 mm thickness
 Sizes: 6x10, 6x12, 6x16, 6x20, 6x24, 6x30, 6x40, 6x48, 10x10, 10x12, 10x16, 10x20, 10x24, 10x30, 10x40 and 10x48 cm in boxes of 50 sheets.

Sizes: 30x40 cm in boxes of 25 sheets.

The vacuum-sealed packaging FOMAPAK ensures optimum contact of film surface with lead screens, simple handling, and is light-tight, air-tight and waterproof.

darkroom packaging (KB)

Sizes: 6x24, 6x40, 6x48, 10x12, 10x24, 10x40, 10x48 and 10x72 cm in boxes of 100 sheets.

Sizes: 10x20, 18x24, 24x30, 30x40 and 35x43 cm interleaved (IF, FW) in boxes of 50 sheets.

Rollfilm packaging

- rollfilm with lead screen
- rollfilm without lead screen (DW)
- bare rollfilm (BLR)

for more details see the technical data sheet of ROLLFILM

Other sizes are subject to be agreed with the manufacturer.

MultiPack – daily package containing 2 films INDUX with various speeds.

Dimensions and speeds of inserted films according to customer's individual requirements.

Film base

INDUX R4 is manufactured on a dimensionally stable bluish polyester base of 0,175 mm thickness.

Screens

Screens-packed kinds (FOMAPAK) content lead screens 0,025 or 0,1 mm thick, backed by a paper of 70 - 90 g/sq. m of basis weight, on both film sides.

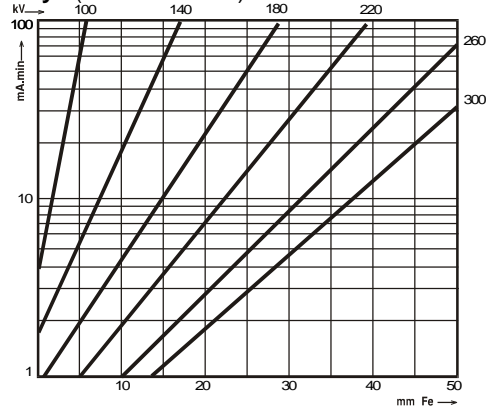
Darkroom illumination

The film is processed at yellow safety illumination with wavelength of 590 nm and higher. Length of exposure and a distance of the processed material from the illumination source should be tested.

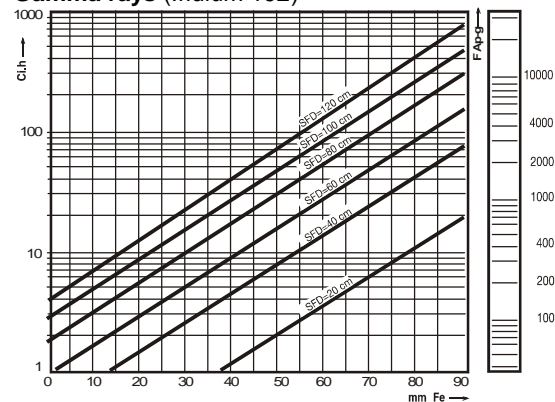
Exposure charts for steel

For optical density D=2, front and back lead screens 0,025 mm thick, FOMADUX LP-T Developer 5 minutes at 20 °C.

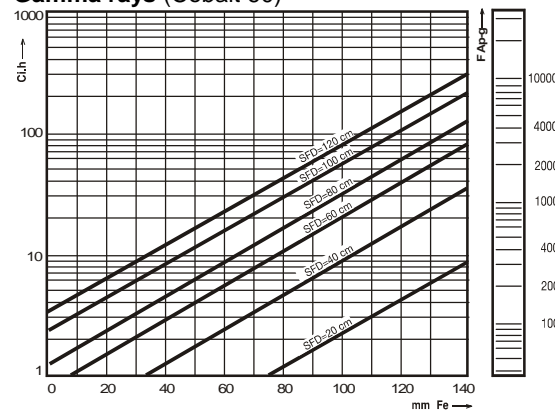
X-rays (FDD = 100 cm)



Gamma rays (Iridium 192)



Gamma rays (Cobalt 60)



Processing

INDUX R4 is intended both for the manual and automatic processing.

Recommended chemicals for the manual processing:

FOMADUX LP-T Developer and Developer-Replenisher

(5 minutes of developing time at 20 °C, 1 + 3)

FOMADUX FIX Rapid Fixer

FOTONAL Wetting Agent

Recommended chemicals for the automatic processing:

FOMADUX LP-D Developer-Replenisher

(2 minutes of developer immersion time at 28 °C)

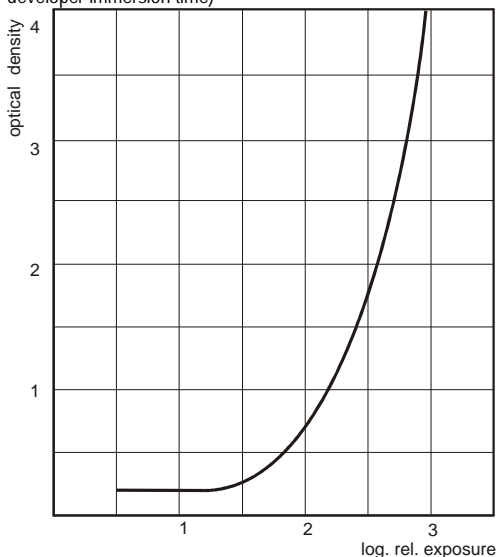
FOMA LP-DS Developer Starter

FOMADUX FIX-Set Hardening Rapid Fixer (Fomadux Fix + Fomafix H)

INDUX R4 can also be processed in corresponding processing chemicals of other manufacturers, for example developer Agfa G135 for automatic processing 100 seconds of developer immersion time at 28 °C or for manual processing 5 minutes of developing time at 20 °C.

Sensitometric characteristic

Source ISO 2 (220 kV/10 mA/8 mm Cu), automatic processing, FOMADUX LP-D Developer, 8 minutes of processing time at 28 °C (corresponds with 2 minutes developer immersion time)



Archiving of processed films

The manufacturer guarantees the archival permanence of minimum 50 years when complying with conditions following:

- films must be perfectly fixed and washed
- films must be stored at a relative humidity of 30 to 60% out of reach of harmful gases.

Storage of unexposed films

Unexposed films should be stored in the vertical position in the original packaging in a cool, dry place (temperature ranging from 5 to 21 °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.

By using and processing of the product Indux R4 arise wastes, which is necessary to environmentally liquidate according to valid legislation.

Wastes:

– packaging foil : PET / AL / PE or PAPER / PE / PAPER

– Pb foil

– waste developers

– waste fixers

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