INDUX R4, INDUX R5 and INDUX R7

INDUSTRIAL X-RAY FILMS

General information

INDUX R4, R5 and R7 are the industrial radiographic films intended for non-destructive material testing using X- or gamma radiation.

INDUX R4 is a medium-speed, high-contrast, extremely fine-grain film, corresponds with the class C3 classification according to EN ISO 11699-1 standard and according to ASTM E1815 standard with class I.

INDUX R5 is a standard-speed, high-contrast, very fine-grain film, corresponds with the class C4 classification according to EN ISO 11699-1 standard and according to ASTM E1815 standard with class I.

INDUX R7 is high-speed, high contrast, fine-grain film, corresponds with the class C5 classification according to EN ISO 11699-1 standard and according to ASTM E1815 standard with class II.

All films are suitable for radiography with or without lead screens and meet requirements for the most standard applications.

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.

INDUX R5 is suitable for the radiography of medium-walled steel or thick-walled light metal parts/products.

INDUX R7 should be used at low voltages for the radiography of medium-walled light metal or thin-walled steel parts/products. At higher voltages the film is suitable for the testing of thick-walled light metal or medium-walled steel parts/products. With high-energy gamma rays the film is suitable for the radiography of thicker-to-thickest dense metal parts/products.

Packaging forms

daylight packaging (FOMAPAK) – one-sheet vacuum-sealed packaging with lead screens of 0,025 mm thickness
Sizes: 6x10, 6x12, 6x16, 6x20, 6x24, 6x30, 6x40, 6x48, 10x10, 10x12, 10x16, 10x20, 10x24, 10x30, 10x40, 10x48, 18x24, 30x40 cm in boxes and other sizes according to an agreement with manufacturer.
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, 10x20, 10x24, 10x40, 10x48, 10x72, 18x24, 30x40 cm in boxes and other sizes according to an agreement with manufacturer.

Rollfilm packaging
– rollfilm with lead screen
– bare rollfilm (BLR)
for more details see the technical data sheet of ROLLFILM

Other sizes are subject to an agreement with the manufacturer.

Film base

INDUX R4, R5 and R7 are manufactured on a dimensionally stable bluish polyester base of 0,175 mm thickness.

Screens

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

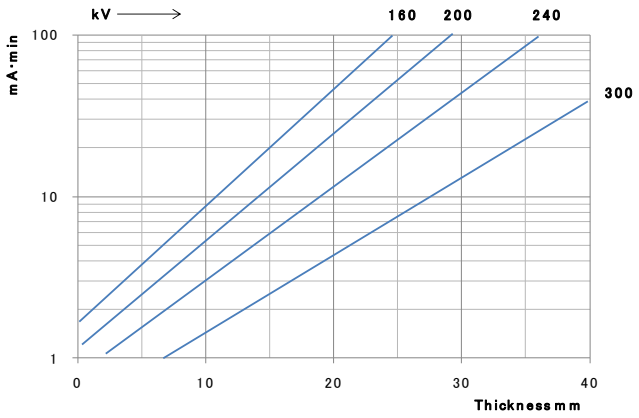
Darkroom illumination

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

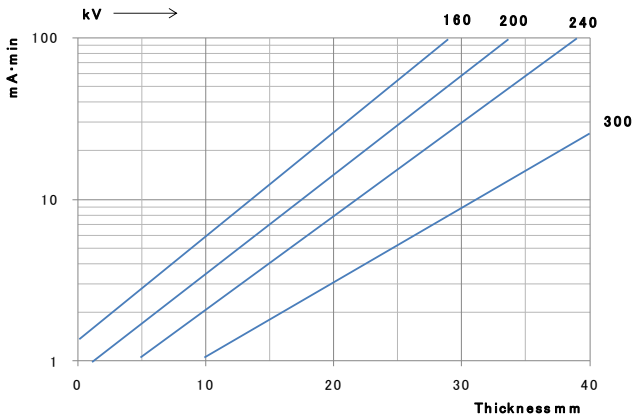
Exposure charts for steel

For optical density D=2, front and back lead screens 0,025 mm thick, automatic processing, FOMADUX LP-ECO Developer, 8 minute processing cycle at 28 °C (corresponds with 2 minutes of developing time).

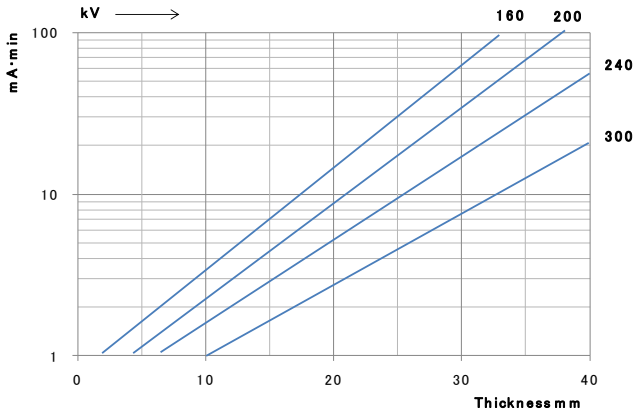
X-rays (SFD = 100 cm) **INDUX R4**



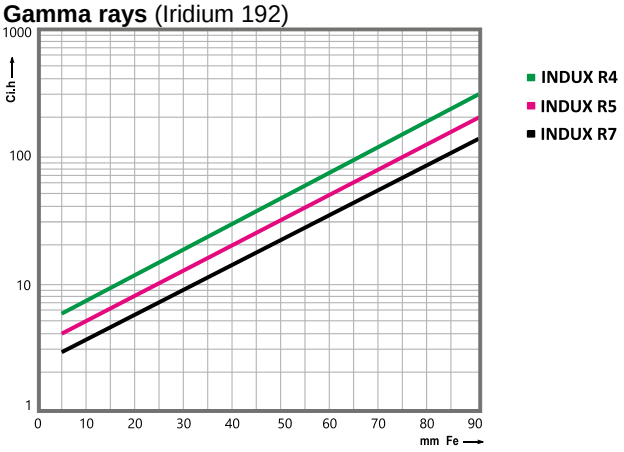
X-rays (SFD = 100 cm) **INDUX R5**



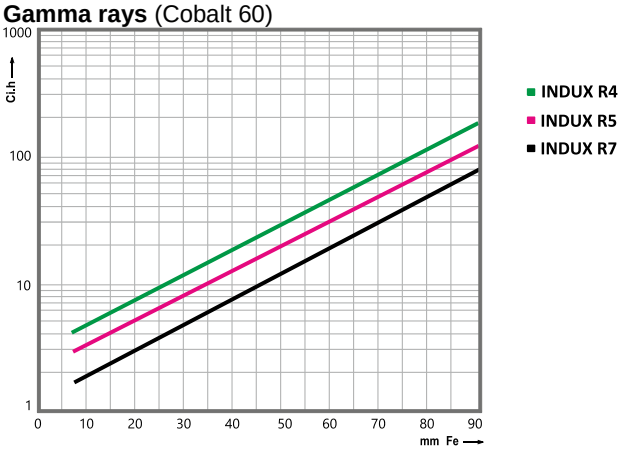
X-rays (SFD = 100 cm) **INDUX R7**



Gamma rays (Iridium 192)



Gamma rays (Cobalt 60)



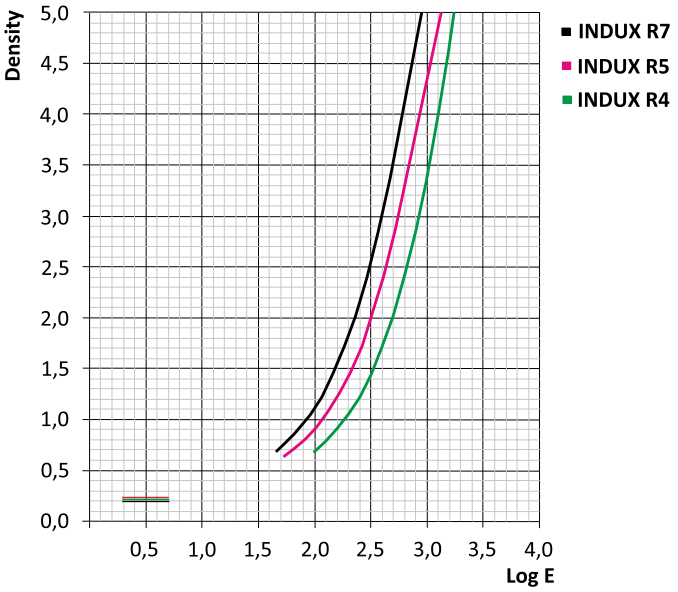
Processing
INDUX R4, R5 and R7 are intended both for the manual and automatic processing.

Recommended chemicals for the manual processing:
FOMADUX LP-ECO Developer
(5 minutes of developing time at 20 ˚C)
FOMADUX FIX-ECO

Recommended chemicals for the automatic processing:
FOMADUX LP-ECO
(2 minutes of developing time at 28 ˚C)
FOMADUX FIX-ECO

FOMA industrial X-ray films INDUX R4, R5 and R7 can also be processed in corresponding processing chemicals of other manufacturers.

Sensitometric characteristics
220 kV / 10 mA / 8 mm Cu, automatic developing, FOMADUX LP-ECO Developer, 8 minute processing cycle at 28 °C (corresponds with 2 minutes of developing 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 10 to 25 ˚C, relative humidity from 40 to 60 %), out of reach of harmful vapours, gases and ionizing radiations.
After opening the film bag, you must re-close it with two folds to secure it against opening. This prevents air moisture from entering the film bag.

Exposed films should be processed as soon as possible.

By using and processing of the product Indux R4, R5 and R7 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

Information according to Article 33 of REACH: The product INDUX contains lead. This substance is included in the list of substances (for possible inclusion in Annex XIV). After handling, hygiene rules must be followed. More information at www.foma.eu.

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

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