

Scientific
Education

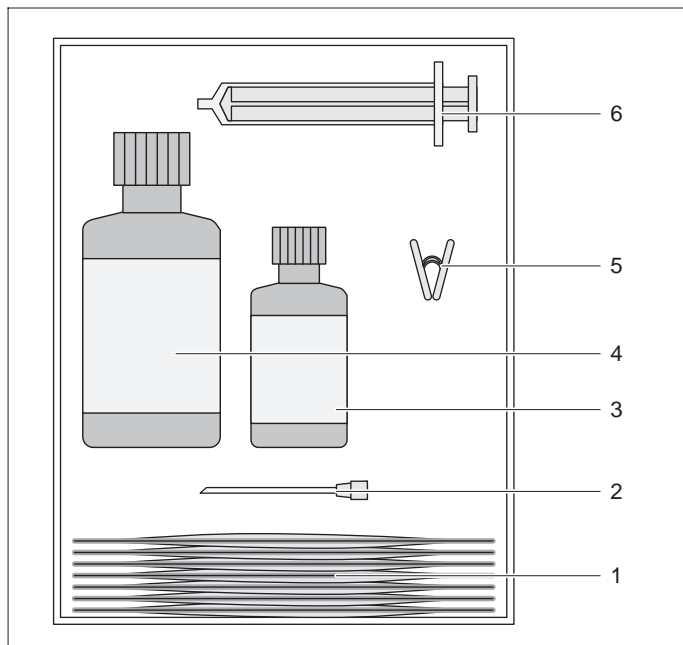
Technical Training
and Education

Trade



LEYBOLD DIDACTIC GmbH

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Instruction Sheet 554 892

Filmpack 2 (554 892)

Filmpack 4 (554 894)

- 1 X-ray films
- 2 Needle
- 3 X-ray developer
- 4 X-ray fixer
- 5 Metal clips
- 6 Syringe

Notes

- Handle your x-ray films carefully, as they can become fogged through their envelopes even without being exposed to x-rays.
- The x-ray films can be fogged by β and γ radiation such as is commonly emitted by standard radioactive preparations for school use.
- The x-ray films can become fogged through their envelopes when exposed to direct sunlight or when subjected to fluorescent light for longer periods.
- If the incident radiation contains a high proportion of soft x-rays, the pattern of the envelope may be visible on the x-ray film.
- The process of heat-sealing the x-ray film in the envelope sometimes causes pressure points at the edges, and occasionally fogging in this area.
- The x-ray film can also become scratched or bent by careless handling in the darkroom. After developing, some edges of the film may be greatly fogged, and arc-shaped images may occasionally appear in the middle of the film.

1 Description

The highly sensitive x-ray films, coated on both sides, are sealed in thin black plastic envelopes. After exposure to β , γ or x-radiation, the x-ray film can be developed in daylight very quickly by injecting the chemicals into the plastic envelope one after another through two light-tight openings. The process is complete after about six minutes, and the x-ray film can be cut out of the envelope completely developed and fixed.

2 Scope of supply

- 1 Bottle x-ray developer
- 1 Bottle x-ray fixer
- 1 Syringe with needle
- 1 Metal clamp

Filmpack 2:

20 sheets of film in light-tight plastic envelopes,
28 mm \times 35 mm

Filmpack 4:

12 sheets of film in light-tight plastic envelopes,
150 mm \times 12 mm, for the Debye-Scherrer camera (55465)

3 Technical data

Times:

Developing time:	1.5 minutes
Fixing time:	4 minutes

Filmpack 2:

Developer:	2.5 ml
Fixer:	3.5 ml

Filmpack 4:

Developer:	3.5 ml
Fixer:	5 ml

4 Storing the photographic chemicals

The fixer is relatively stable and can be stored over longer periods with no problems.

Air above the surface of the liquid can cause the developer to become inactive over longer storage periods. When the developer breaks down, it takes on a brown tint. A slight yellow tinge does not affect the action of the developer.

- Before closing the developer bottle, squeeze it to force the level of the liquid to the top edge of the bottle opening.
- For longer periods of storage, transfer the developer from partially filled bottles to a smaller bottle.

5 Exposure

5.1 Transillumination photographs:

- Set up the film as close as possible to the object, with the greatest possible distance between the film and the x-ray source.
- At maximum operating conditions of the x-ray tube, set exposure times of several minutes (the exposure time depends on the object to be transilluminated).

5.2 Laue diagrams and Debye-Scherrer photographs

- Set up the film approx. 10-15 mm from the object so that you can see the diffraction reflections.
- Depending on the exposure level you wish to achieve, select an exposure time from 0.5 h to 2 h.

6 Developing and fixing

6.1 Developing:

- Raise the plunger of the syringe to the 1 ml mark so that there is air above the surface of the liquid and draw off the required amount of developer using the syringe.
This ensures that the entire quantity of the liquid is expelled from the syringe and injected into the film envelope.
- Insert the syringe with needle into one of the two openings near the imprint on the film envelope and inject the developer.
- Gently rub the film envelope between your thumb and forefinger for about 1.5 minutes (developing time) to distribute the liquid evenly over both sides of the film.

6.2 Fixing:

- Inject the fixer without removing the developer.
- Gently rub the film envelope between your thumb and forefinger for about 4 minutes (fixing time) to distribute the liquid evenly over both sides of the film.

6.3 Removing the x-ray film:

- Cut off one corner of the film envelope and squeeze the photographic chemicals into a receptacle provided for this purpose.
- Then cut off the bottom edge of the film envelope.
- Grasp the x-ray film by one corner and pull it out.
- Wash off the x-ray film under running water for several seconds.

If you want to save your x-ray film for your permanent collection:

- Fix the x-ray film for a further 10 minutes (you can use normal fixer either with or without hardener) and then wash it for 30 minutes under running water.