



## X-ray

# Darkroom Fog Test for Dental Facilities (Extraoral)

### Equipment needed:

- Most facilities have only one speed film. However, if you have more than one speed film, use the "fastest" film in the facility.
- New box of film.
- Stopwatch or timer to measure 2 minutes.

### Procedure:

- Select the smallest cassette in the facility. Turn off all lights (safelight and white lights) in the darkroom. Load the cassette from a new box of film while in total darkness.
- In the x-ray room, place the cassette in the cephalometric wall cassette holder or on a table or on the floor. (If the tube head can't be directed towards the floor, the cassette can be exposed by the cephalometric unit.) Record the distance.
- Place stepwedge on top of cassette in the center, aligning the length of the stepwedge with the length of the film. (Tape the stepwedge on a wall cassette holder.) For a panoramic cassette, place the stepwedge perpendicular to the length of the cassette.
- Establish a technique: (You must pre-expose the film to x-ray to sensitize it.) Techniques will vary depending on the speed of the film-screen system, processing, etc. Approximately 7 mA @ 70 kVp @ 30 impulses (0.5 sec) will usually work on 400 speed system at 40". Expose the film. Develop the film.
- Once a technique has been established, record it for future use.
- From the new box of film, reload the cassette in total darkness.
- Expose the film with the techniques established.
- In the totally darkened darkroom remove the film from the cassette and place it on the counter. Cover half of the film with the cassette or cardboard. (If you are using a stepwedge, cover the film so the long half of the stepwedge is covered.) A trick is to run your fingernail (or pencil) down the edge of the cassette or cardboard that is central to the film. This will later help differentiate between the covered and uncovered halves of the film.
- Turn on safelights.
- Let film sit for 2 minutes, which is the nationally recognized standard. Change your position in the darkroom so as not to block any light from the film.
- Process the film. Because your eyes have now partially adapted to the dark (about 5 minutes) look for light leaks around the door, and around ceiling fixtures and vents. White light leaks must be sealed off.
- Compare the optical density between the exposed side of the film and the covered side of the film. If the sides differ by more than one step, a fog problem exists that needs to be corrected. It will be easier to do a side-by-side comparison if you cut the film along the line you made on the film.
- Date film(s) and record results.

### Determining where fog is from:

Run another fog test, this time leaving the safelights off. If the fog is reduced, you have a safelight problem. If the fog is not reduced, there is probably a white light problem.

**Some possible sources of safelight fog:**

- The bulb or filter may give off the correct color spectrum for the film being used.
- The bulb may not be the correct wattage for the distance to the work surface. A 15-watt bulb should be four feet or more from the surface. If the distance is less, switch to a 7 1/2 watt bulb. Use 25 watt or less for ceiling lights.
- There may be a crack in the safelight filter. If so, replace filter.
- The filter may be in the receptacle incorrectly. Follow manufacturer's instructions for installation of the filter. There may be a specific orientation for the filter. (The lettering should be readable from the outside.)
- Are there other indicator lights that may not be "safe" for your film? If so, run a test with all indicators light covered.

**Sources of white light fog:**

Stay in closed darkroom (no lights on and indicator lights covered) for approximately 10-15 minutes, and then look for white light leaks that were not seen while waiting for the 2 minute fog test. Seal off any sources of white light.

For questions, please contact the X-ray Unit at (651) 201-4545 or [x-ray@health.state.mn.us](mailto:x-ray@health.state.mn.us)

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