

## Foil test

### Functional test for an ultrasonic bath

A foil test should be carried out before the first use and at regular intervals, e.g., every 3 months. This serves to ensure a consistent effect on the part of the ultrasound. The frequency of implementation is your responsibility.

The foil test is a simple method for displaying the intensity and distribution of cavitation in an ultrasonic bath. For this purpose, an aluminium foil stretched on a foil test frame is inserted. Depending on the duration of sonication, this is perforated or destroyed to a certain extent by cavitation.

In order to be able to compare results, it is **important that the conditions of the foil test are always the same:**

- Filling the oscillating tank up to the filling level mark
- Temperature of the sonication liquid
- Duration of degassing
- Positioning of the frame
- Foil type (brand, thickness)
- Duration of sonication
- Type and concentration of the ultrasound-preparation.

#### Liquid for the foil test

In order to obtain sufficiently strong cavitation, the boundary surface tension of the water used must also be reduced for the foil test with the help of surfactant preparations.

We recommend the following ultrasound preparations:

- TICKOPUR R 33
- TICKOPUR R 30
- TICKOPUR TR 7
- TICKOMED 1
- STAMMOPUR R
- STAMMOPUR DR 8

If none of these preparations is available, a neutral or mildly alkaline preparation that is not destructive

to aluminium should be used. The preparation must be approved by the manufacturer for use in an ultrasonic bath.

#### Test result and documentation

With test conditions always remaining the same, the test result must be assessed based on the perforated area of the foils. The perforated surfaces of the foils should always have approximately the same expanse and distribution – they are never exactly congruent. Through regular foil tests, it is possible to perform a constant process check, e.g., for reprocessing medical devices. An alternative is to measure cavitation noise according to IEC TS 63001:2019.

You can download a documentation template here for documenting the test results:

<https://bandelin.com/folientest/>

You will also find an application video there.

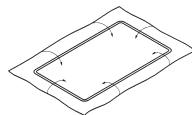


What's more, the foils can be archived in a suitable manner (scan, photo, etc.). This makes it possible to compare the foils at any time.

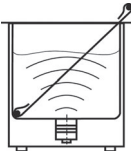


#### Carrying out the foil test

1. Fill the oscillating tank with water and a suitable ultrasound preparation in the dosage specified by the manufacturer up to the filling level mark.
2. Degas the sonication liquid.
3. Clamp the aluminium foil (household foil 10 µm to 25 µm thick) onto the foil test frame. Depending on the size of the tank, the frame may protrude. It is sufficient to cover the part of the foil test frame that is covered by the sonication liquid.



4. Place the covered foil test frame diagonally in the middle of the oscillating tank. If necessary, fix it in place.
5. Switch on the ultrasound. Sonicate the film for at least 1 minute until visible perforation or pitting occurs. For more stable foils (thicker or coated), the duration of sonication can be up to 3 minutes. Make a note of the duration of your test.
6. Switch off the ultrasound. Take out the foil test frame. Remove the aluminium foil from the foil test frame and allow it to dry.
7. The foil must be perforated. If not, it is recommended that the device be checked by the service department of BANDELIN electronic GmbH & Co. KG.
8. Archive the foil with the test date and serial number of the ultrasonic bath as well as the previously selected conditions and duration. The documentation template for the foil test can additionally be completed and archived.
9. Rinse the oscillating tank thoroughly to remove dissolved foil particles.



Suitable foil test frames can be ordered from BANDELIN electronic GmbH & Co. KG.

The foil test frames are designed for a wide range of tank dimensions. Aluminium foil is also required for the test procedure; this is not included in the scope of delivery.

Type	Code no.	for
FT 1	3190	DT 31/H, DT 52/H, RK 31/H, RK 52/H
FT 4	3074	DL 102 H, DL 255 H, DT 100 / H, DT 102 H /H-RC, DT 103, DT 106, DT 255 /H /H-RC, RK 100 /H, RK 102 H, RK 103, RK 106, RK 255 /H
FT 6	3222	DL 156 BH, DT 156 /BH,
FT 14	3084	DL 510 H, DL 512 H, DL 514 BH, DT 510 /H /H-RC, DT 512 H, DT 514 H /BH / BH-RC, DT 510 F, RK 510 /H, RK 512 H, RK 514 /H /BH, ZE 514/...DT, RM 16.2 U /UH
FT 36	3673	DT 1028 F, ZE 1031/1032/ ...DT
FT 37	3674	DT 1058 M, ZE 1058/1059/ ...DT
FT 38	3672	MC 1001/E
FT 40	3094	DL 1028 H, DT 1028 /H /CH, RK 170 H, RK 1028 /H /C / CH, RK 1040, RM 40.2 U /UH
FT 42	3224	TRISON (TE 3000)
FT 45	3204	DT 1050 CH, RK 1050 /CH, RM 75.2 U /UH