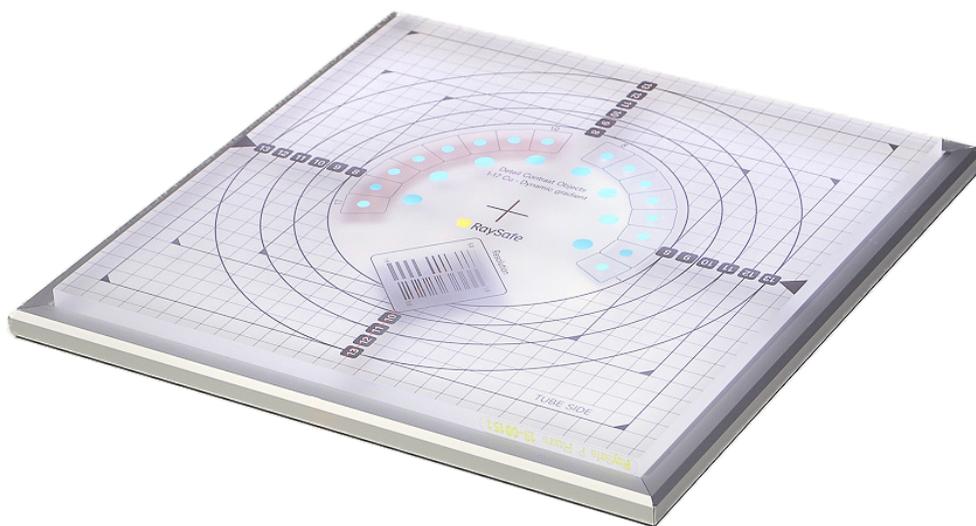
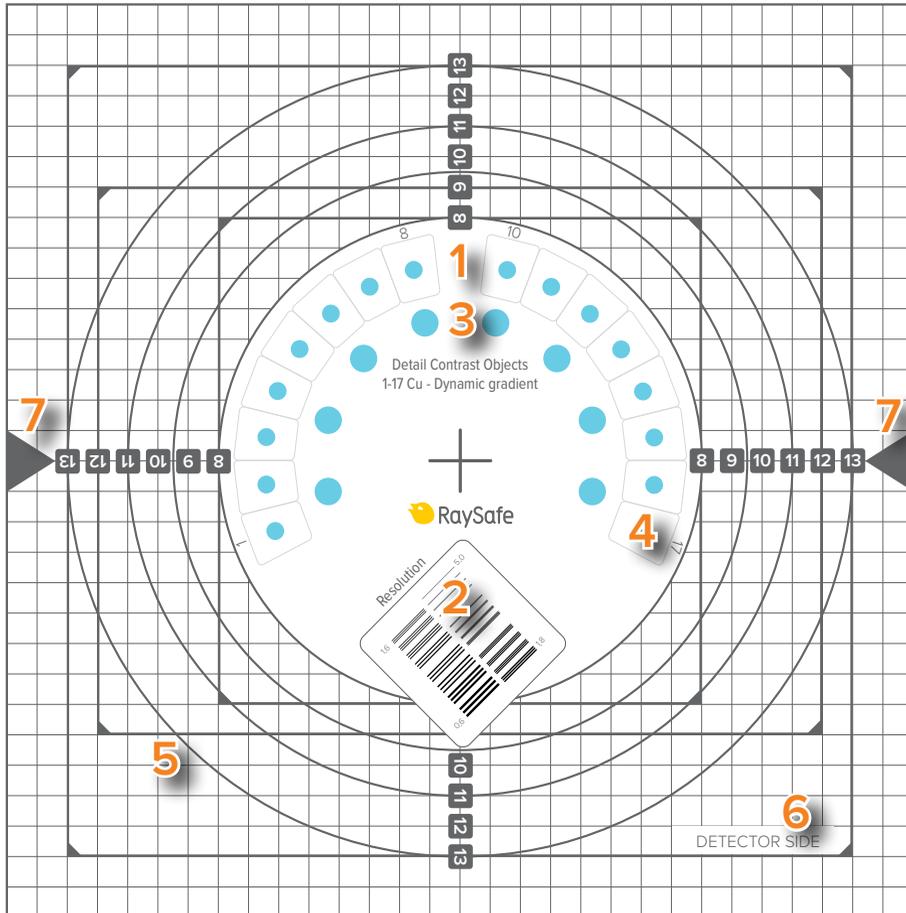


# P Fluoro



# ABOUT THE P FLUORO

The phantom is made of PMMA (polymethyl methacrylate) and copper, with details of different materials. It is mounted in an aluminium frame to be used with the supplied holder. The phantom complies with DIN 6868-150, DIN 6868-4 and IEC 61223-3-1.



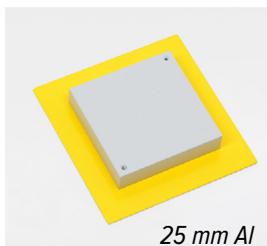
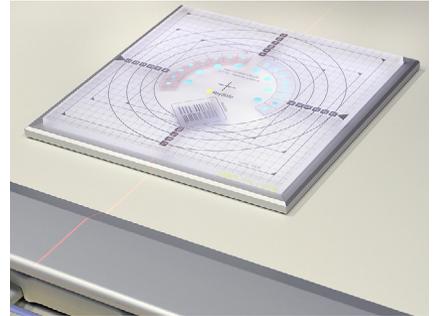
1. Dynamic copper step wedge.
2. Spatial resolution test pattern.
3. Detail contrast objects.
4. Detail contrast objects on copper step wedge.
5. Collimation lines for alignment of light and X-ray field.
6. Two-sided print for easier positioning, showing which phantom side to front the tube and which side to front the detector.
7. Arrows showing the direction of placement relative the anode-cathode axis of the X-ray tube.



# TEST PROCEDURE

This is an example. Be sure to comply with your local regulations.

1. Position the phantom with “Detector side” towards the detector and “Tube side” towards the X-ray source. The center and main axis should align with the light marker of the apparatus. Be careful to have the arrows on the phantom in the same direction as the anode-cathode axis of the X-ray tube.
2. Narrow the light field (which should represent the X-ray field) to the chosen markings on the phantom.
3. Check that the machine has AEC turned on.
4. Use an additional 25 mm aluminium filter (patient equivalent) for the test in order for the tube voltage to reach the desired range (for example  $75 \pm 7$  kV according to DIN 6868-150). Mount the Al 25 filter in rails on the collimator. If 25 mm Al is not enough, use one or both of the supplied Cu filters.

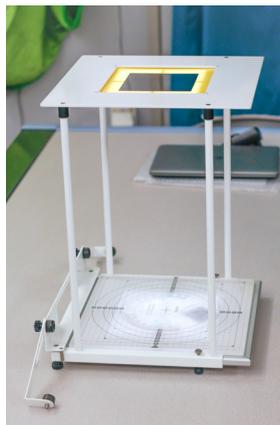


25 mm Al

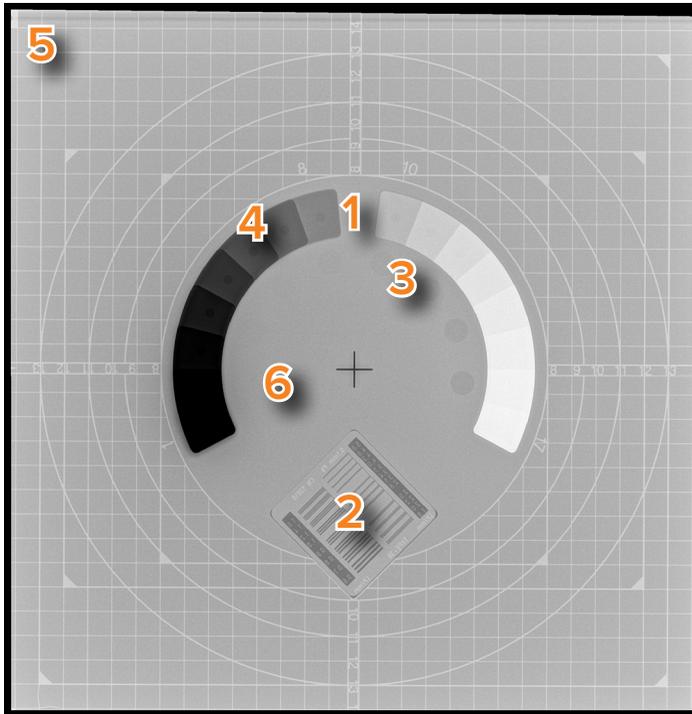


25 mm Al + 1 mm Cu

Some x-ray systems don't have the possibility to add the 25 mm Al filter in a slot close to the collimation, for example when the tube is positioned underneath the table. Use the phantom holder for positioning the filter and the phantom properly in these cases. Some positioning examples:



5. Make the exposure and read the results from the image.



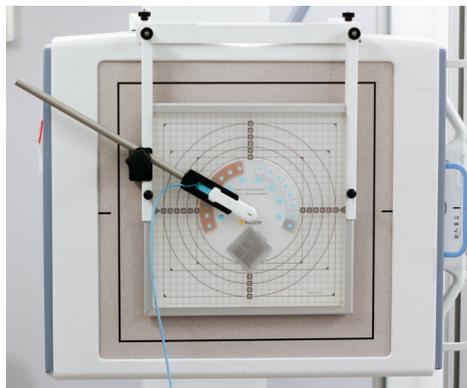
1. **Dynamic range:** Number of Cu steps visible (max 17)
2. **Spatial resolution:** Number of line pairs per millimeter (max 5.0 LP/mm)
3. **Contrast resolution:** Visibility of detail contrast objects (max 8)
4. **Contrast resolution:** Visibility of detail contrast objects on copper step wedge (max 16)
5. **Collimator light field and beam alignment:** Check the alignment using the grid and circles (ok or not)
6. **Homogeneity:** Artefacts in the image (yes/no)

## OTHER SETUPS

The phantom and holder can be used for mounting on chest wall.

A RaySafe X2 or Xi detector can also be mounted with a magnetic holder (included with the phantom) that can attach to the phantom holder. This way you can get the dose and dose rate during the measurement.

For this setup, an aluminium rod and detector holder from the RaySafe Flexi Stand (not included) is needed.



# TECHNICAL SPECIFICATION

The phantom is made of a 17 mm thick PMMA (Polymethyl methacrylate) plate and a 1.5 mm thick copper plate. The phantom complies with DIN 6868 150, DIN 6868-4 and IEC 61223-3-1.

1. **Dynamic copper step wedge,**

consisting 17 steps made of different Cu thickness: 0.00, 0.18, 0.36, 0.54, 0.74, 0.95, 1.16, 1.38, 1.50, 1.73, 1.96, 2.21, 2.45, 2.70, 2.96, 3.22, 3.48 mm. The PMMA is thinned out at the site of the copper step wedge: 4 mm PMMA in step 1–8, and 12 mm at step 10–17.

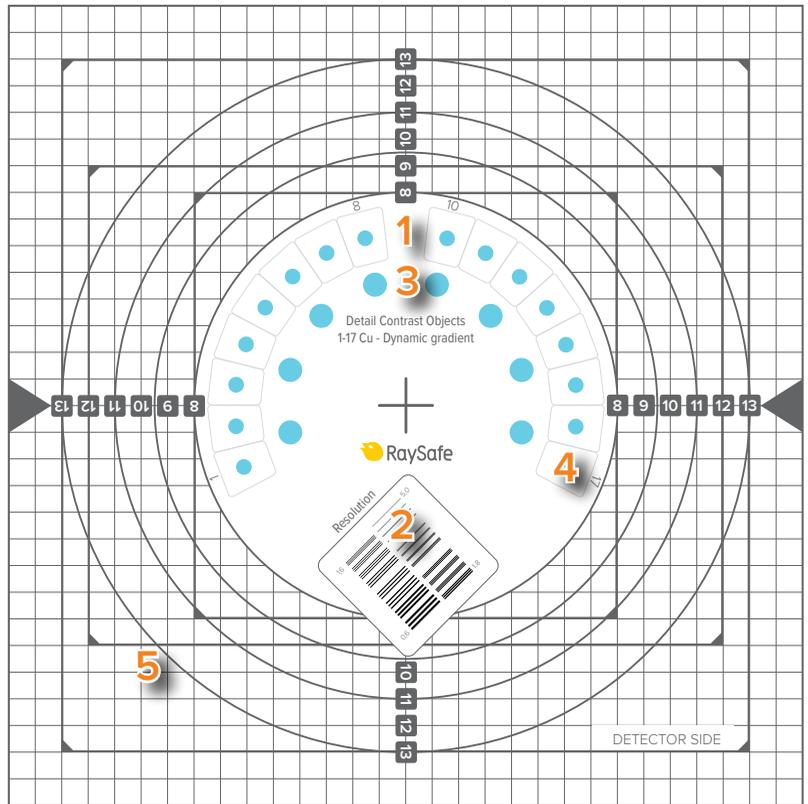
2. **Spatial resolution test pattern**

with 3 periods for each resolution: 0.6, 0.7, 0.8, 0.9, 1.0, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.1, 3.4, 3.7, 4.0, 4.3, 4.6, 5.0 LP/mm. The pattern is made of 100 µm thick lead, and is recessed into the PMMA. The copper plate is thinned to 1.1 mm at the site of the pattern.

3. Eight circular **detail contrast objects**, Ø 10 mm, in the homogeneous field. The objects are air cavities in the PMMA: 0.4, 0.6, 0.8, 1.2, 1.7, 2.4, 3.4, 4.0 mm deep.

4. 16 circular **detail contrast objects on copper step wedge**, Ø 4 mm, air cavities with a depth of 2.5 mm in PMMA on every step of the copper step wedge (except on number 9).

5. Collimation lines for alignment of light and x-ray field. Dimensions: 26×26; 18×24; 16×16 cm. Circular diameter dimensions: 26, 22, 19, 16 cm.



# WARRANTY

Unfors RaySafe warrants to the original product purchaser that each product it manufactures will be free from defects in material and workmanship under normal use and service. The warranty period is 12 months and begins on the date of delivery.