

Model 18-220 Mammographic Accreditation Phantom

Radiology professionals and patients rely on mammographic systems to produce breast images of the highest quality. However, in sensitive mammographic imaging equipment, small deviations in system performance can lead to substantial decreases in image quality.

Without the phantom to serve as a baseline test, even the most experienced professional can miss the subtle degradation of image quality that occurs gradually over time in sensitive mammographic equipment. Weekly checks with this phantom can alert you to minor deviations in image quality before they impair the diagnostic accuracy of patient films.

The Model 18-220 Mammographic Accreditation Phantom is designed to attenuate the x-ray beam in the same way as a human breast compressed to 4.0 to 4.5 cm. Test objects of different sizes and shapes are embedded in a wax block enclosed in an acrylic base. These test objects represent malignancies or small breast structures: simulated microcalcifications, fine nylon threads for fibrils and ductal structures, and parts of spheres for tumorlike masses.

When the Mammographic Accreditation Phantom is used to create an image, the mammographic imaging system should detect a minimum of 4 fibrils, 3 groups of specks and 3 masses in the phantom. If the phantom image is good, the system may need no further testing. However, if the objects in the image cannot be seen, or if the visibility of these objects decreases over a period of weeks, it will be an indication that the system needs additional testing. Variables to check include the film processor, kVp, phototimer accuracy, film/screen contact and radiation beam quality.

The Mammographic Accreditation Phantom will assist in complying with the American College of Radiology (ACR) Accreditation Program requirements. Since this phantom adheres to ACR phantom specifications, it will assist you in meeting the requirements of MQSA.



The Mammographic Accreditation Phantom is shown with the optional CNMC Model 303 mammographic ion chamber and Model 303ACR chamber holder. Contains: nylon fibrils, simulated microcalcifications and tumor-like masses that mimic the actual clinical pathology.

Model 303ACR, Chamber Holder

This acrylic chamber holder is designed to conveniently position the Model 303 mammographic ionization chamber close to the Mammographic Accreditation Phantom, with the center of the chamber's sensitive volume flush with the top of the phantom, for simultaneous in-air dose measurement and artifact imaging. Its wide base maintains parallelism to the pressure plate, and the ionization chamber is held securely in place by a nylon screw. The backscatter is negligible due to its hollow construction.

Specifications

Test objects:	six nylon fibrils simulating soft tissue fibrils, five groups of aluminum oxide specks simulating micro-calcifications, five parts of spheres simulating tumor masses, imbedded in a square wax block.
Phantom material:	acrylic (PMMA)
Dimensions:	10.2 x 10.8 x 4.5 cm (4 x 4 ^{1/4} x 1 ^{3/4} in)
Weight:	0.55 kg (1.2 lbs)