

AbstractID: 1153 Title: The Use of High Density Mesh Patterns for the Screen-Film Contact Test in Mammography

The importance of maintaining excellent screen-film contact in mammography is stressed in both the Food and Drug Administration's Mammography Quality Standards Act and the American College of Radiology's Mammography Quality Control Manual. Both organizations require the use of a 40-mesh (40 wires per inch) test pattern to determine the acceptability of each screen cassette at six-month intervals. In this study, contact test tools were constructed with mesh patterns from 40-mesh to 635-mesh using a variety of mesh materials including copper, bronze, and stainless steel. The ACR recommended film optical density range of 0.70 O.D. to 0.80 O.D. was achieved with exposures of 0.5+ seconds. Acrylic sheets, placed close to the x-ray tube, were added as needed to reduce the optical density to the recommended range. Kodak Min-R 2000 film and Kodak Min-R 2000 screens were used for the tests. None of the cassettes were known to have any areas of poor screen-film contact based on the methodology prescribed by the ACR. Higher density patterns from 100-mesh to 325-mesh revealed numerous dust particles that were consistently invisible when using a standard 40-mesh pattern. Individual dust particles were also visible using even higher density mesh test tools, but the mesh pattern itself was either only faintly discernable under 20X magnification (400-mesh) and or not discernable at all (635-mesh). The use of high density mesh patterns (> 40-mesh) in evaluating mammography screen-film systems will enable users to visualize currently undetectable small areas/particles that may interfere with clinical detail in mammography.