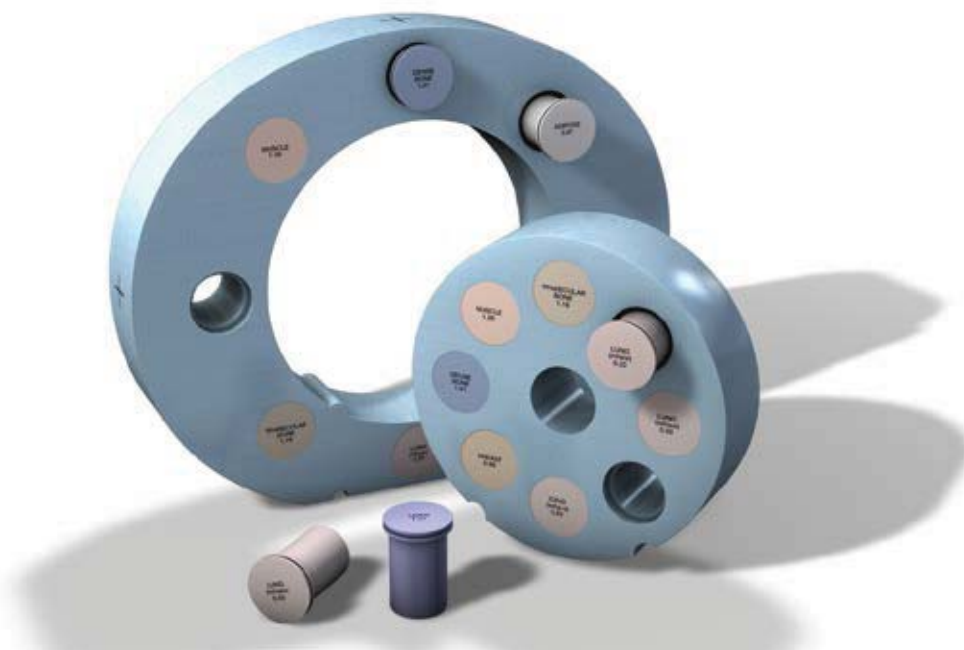


Electron Density Phantom

Model 062M



CORRELATE CT NUMBER AND TISSUE ELECTRON DENSITY

Because CT scans are used to correct for tissue inhomogeneities in radiotherapy treatment planning, it is important to obtain a precise relationship between CT number (in Hounsfield units) and electron densities. The Model 062M Electron density phantom enables precise correlation of CT data to electron density of various tissues. The phantom is manufactured from CIRS Tissue Equivalent Materials.

The Model 062M consists of two nested disks made from Plastic Water® -LR. They can represent both head and abdomen configurations. Nine different tissue equivalent electron density plugs can be positioned at 17 different locations within the scan field. Included is a water vial plug that can be filled with any fluid. Optional distance marker plugs enable quick assessment of the CT scanner's distance measurement accuracy.

Physicists performing treatment planning need accurate tools to evaluate CT scan data, correct for inhomogeneities and to

document the relationship between CT number and tissue density. To improve the accuracy of your treatment planning, consider the CIRS Model 062M Electron Density Phantom.

The 062M is just one of three configurations available as a part of the Cone Beam CT Electron Density & Image Quality Phantom System.

Features

- Evaluate CT scan data
- Correct for inhomogeneities
- Document relationship between CT number and tissue electron density
- Simulate indicated tissue within the diagnostic energy range
- Quick assessment of distance registration

SPECIFICATIONS

MODEL 062M INCLUDES

| QTY | PART NO. | DESCRIPTION | PHYSICAL DENSITY, g/cc | ELECTRON DENSITY, x 10 ²³ electrons/cc | RED (RELATIVE TO H ₂ O) |
|-----|----------|--|---------------------------|--|---------------------------------------|
| 1 | 062MA-01 | Electron Density Head Insert | 1.029 | 3.333 | 0.998 |
| 1 | 062MA-02 | Electron Density Body without Head Insert | 1.029 | 3.333 | 0.998 |
| 2 | 062A-04 | Lung (Inhale) Equivalent Electron Density Plug | 0.20 | 0.634 | 0.190 |
| 2 | 062A-05 | Lung (Exhale) Equivalent Electron Density Plug | 0.50 | 1.632 | 0.489 |
| 2 | 062A-06 | Breast (50% Gland / 50% Adipose) Equivalent Electron Density Plug | 0.99 | 3.261 | 0.976 |
| 2 | 062A-08 | Solid Trabecular Bone (200 mg/cc HA) Equivalent Electron Density Plug | 1.16 | 3.730 | 1.117 |
| 2 | 062A-09 | Liver Equivalent Electron Density Plug | 1.07 | 3.516 | 1.052 |
| 2 | 062A-10 | Muscle Equivalent Electron Density Plug | 1.06 | 3.483 | 1.043 |
| 2 | 062A-11 | Adipose Equivalent Electron Density Plug | 0.96 | 3.171 | 0.949 |
| 2 | 062A-15 | Solid Dense Bone (800 mg/cc HA) Equivalent Electron Density Plug | 1.53 | 4.862 | 1.456 |
| 1 | 062A-27 | Solid Dense Bone (1250 mg/cc HA) Equivalent Electron Density Plug | 1.82 | 5.663 | 1.695 |
| 1 | 062MA-39 | Water Equivalent Material Surrounding Removable Ø 1" Vial for Real Water Electron Density Plug | 1.00 | 3.340 | 1.000 |
| 1 | 062M-30 | Set of 2 Feet for Model 062M | | | |
| 1 | 062M-40 | Soft Carry Case for Model 062M | | | |
| 1 | | User Guide | | | |
| - | | 48 Month Warranty | | | |

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|----------------------------|--|
| OVERALL DIMENSIONS: | Electron Density Head Insert: Ø 180 mm x 50 mm (Ø x D) Electron Density Body without Head Insert: 330 mm x 270 mm x 50 mm (W x H x D) |
| WEIGHT: | Electron Density Head Insert: ≈ 0.950 kg (2 lbs.) Electron Density Body without Head Insert: ≈ 2.1 kg (4.7 lbs.) |
| MATERIALS: | Water and Tissue Equivalent Epoxy Resins |

MODEL 062M OPTIONAL ACCESSORIES

| PART NO. | DESCRIPTION | PHYSICAL DENSITY, g/cc | ELECTRON DENSITY, x 10 ²³ electrons/cc | RED (RELATIVE TO H ₂ O) |
|-----------|---|---------------------------|--|---------------------------------------|
| 062MA-07* | 800 mg/cc HA in Water Equivalent - Core Insert | 1.53 | 4.862 | 1.456 |
| 062MA-12 | Titanium Rod Core Insert | 4.51 | 12.475 | 3.735 |
| 062MA-13 | Distance Marker Insert | 1.029 | 3.333 | 0.998 |
| 062MA-16 | Water Equivalent Insert | 1.029 | 3.333 | 0.998 |
| 062MA-17* | 1000 mg/cc HA in Water Equivalent - Core Insert | 1.66 | 5.243 | 1.570 |
| 062MA-18* | 1250 mg/cc HA in Water Equivalent - Core Insert | 1.82 | 5.663 | 1.695 |
| 062MA-19* | ICRU Cortical Bone Equivalent Core Insert** | 1.93 | 5.956 | 1.780 |
| 062MA-20* | 1500 mg/cc HA in Water Equivalent - Core Insert | 1.99 | 6.134 | 1.837 |
| 062MA-21* | 1750 mg/cc HA in Water Equivalent - Core Insert | 2.15 | 6.600 | 1.976 |
| 062A-26 | Solid Dense Bone (1000 mg/cc HA) Equivalent Electron Density Plug | 1.66 | 5.243 | 1.570 |
| 062A-28 | Solid Dense Bone (1500 mg/cc HA) Equivalent Electron Density Plug | 1.99 | 6.134 | 1.837 |
| 062A-29 | Solid Dense Bone (1750 mg/cc HA) Equivalent Electron Density Plug | 2.15 | 6.600 | 1.976 |

* These inserts contain a 10 mm diameter core of indicated bone reference surrounded by H₂O background. Hydroxyapatite (unit mg/cc) in H₂O background Plugs to accommodate chambers, TLD's and film available upon special request.

** CIRS Cortical bone reference is based on ICRU Report No.44, and represents ≈12.2% H₂O, 24.6% protein, 58% mineral (assumed to be Calcium Hydroxyapatite (HA)), and 5.2% monosaccharides. CIRS further offers a series of mineral density references that mimic various HA concentrations in a pure water-equivalent epoxy background matrix.

