

CT Electron Density Phantom

Create CT-to-density tables with ease for TPS commissioning.

- Cover a wide range of electron density values
- Help ensure accurate calculations of dose distributions

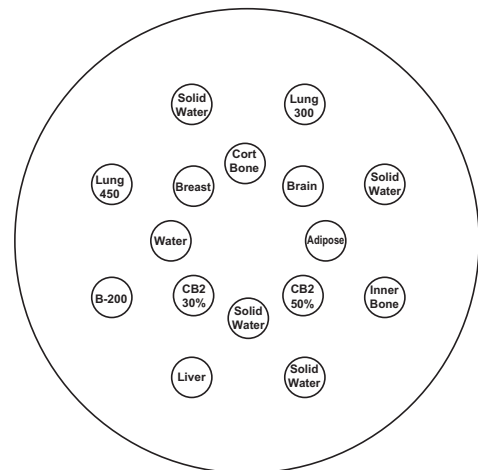


The American Association of Physicists in Medicine¹ (AAPM) and International Atomic Energy Agency² (IAEA) report that Treatment Planning Systems (TPS) convert Hounsfield Units (HUs) to electron densities for accurate calculations of dose distributions. This is commonly done using electron density reference materials that enable the verification procedure.

The only Solid Water[®] Insert Holder

The CT Electron Density Phantom consists of a zero HU Solid Water[®] disk the size of an average pelvis. Sixteen insert chambers in the disk are designed to be used with interchangeable Tissue Mimicking Materials (TMM), used for characterization. Our standard Electron Density Insert Set includes 13 different materials with a wide range of electron density values.

Use the electron density inserts to create CT-to-density tables needed for TPS commissioning. The Solid Water disk also contains eight, 1mm diameter holes spaced at 50 mm intervals around the center of the phantom to test the geometric accuracy of the CT scanner. The same Solid Water disk can be used for calcium and iodine inserts to evaluate the Dual Energy characteristics of CT scanners.



Suggested arrangement of tissue materials

13 unique materials provide a full range of HU to electron density references

Additional materials are available



Specifications

Disk Material	Zero HU Solid Water®
Diameter:	33 cm (12.9 in)
Height:	5 cm (2 in)
Geometric Accuracy Testing:	1 mm diameter holes spaced at 50 mm intervals
Weight	
Disk and Standard Inserts:	4.6 kg (10 lbs)
With Case:	6.6 kg (14.5 lbs)

Tissue Mimicking Inserts	Electron Density Relative to Water	Physical Density (g/cm ³)
Lung (LN-300)	0.29	0.30
Lung (LN-450)	0.40	0.45
Adipose (AP6)	0.90	0.92
Breast	0.96	0.99
Zero HU Solid Water (x4)	0.99	1.02
Brain	1.05	1.05
Liver (LV1)	1.07	1.08
Inner Bone	1.09	1.12
Bone (B200)	1.11	1.15
Bone (CB2-30% Mineral)	1.28	1.34
Bone (CB2-50% Mineral)	1.47	1.56
Cortical Bone (SB3)	1.69	1.82
True Water	1.00	1.00
Optional Aluminum (1100-H14)	2.36	2.71
Optional Titanium (Grade 2)	3.74	4.51
Optional Stainless Steel (Type 316)	6.73	8.00

Tissue Mimicking Materials (TMM) can play a key role in the dose calculations for Treatment Planning Systems and for absorbed dose estimates in radiographic imaging studies. Sun Nuclear has a full line of TMM for all of your clinical and research needs.

¹ American Association of Physicists in Medicine Radiation Therapy Committee Task Group 53: Quality Assurance for Clinical Radiotherapy Treatment Planning

² IAEA TECDOC-1583. Commissioning of Radiotherapy Treatment Planning Systems: Testing for Typical External Beam Treatment Techniques