

# Electron Density Phantom

The Electron Density Phantom (EDP) is an important tool to calibrate radiation oncology treatment plans to optimize delivered dose to the patient.

The Electron Density Phantom QRM-EDP houses inserts providing 5 different tissue equivalent materials used for the HU to electron density calibration of CT scanners and radiation therapy treatment planning systems. All tissue equivalents represent the real human tissue regarding its physical density and electron density.

The new revised edition of the EDP provides tissue equivalent realistic physical densities AND electron densities of human tissues of highest interest in radiation oncology treatment planning. The non-accordance of these values is a major handicap of other available electron density (or tissue equivalent) phantoms. Particularly in the higher density range (bone), this is the first phantom that provides realistic tissue simulation and values.

## Specifications

Phantom diameter: 100 mm  
 Phantom height: 100 mm  
 Phantom weight: 0.9 kg  
 Phantom body: Water equivalent (CTWATER<sup>®</sup>)  
 app.  $0 \pm 5$  HU (at 80-140 kV)

### Inserts:

- Adipose (20 mm)
- Water (20 mm)
- Muscle (20 mm)
- Spongiose Bone (20 mm)
- Cortical (Mandible) Bone (20 mm)
- Air (central insert, D = 30 mm)

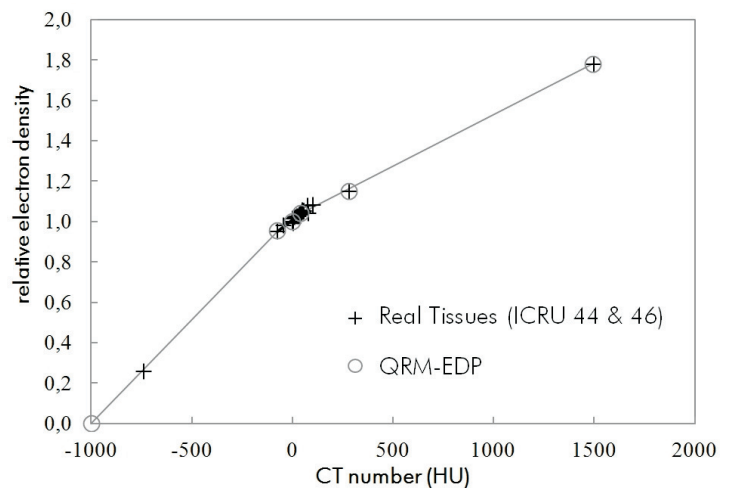
Available data: Density, electron density, electron density relative to water, stopping power  
 Tissue equivalent inserts are also available separately!

## References:

Yohannes I, Kolditz D, Langner O, Kalender WA; A formulation of tissue- and water-equivalent materials using the stoichiometric analysis method for CT-number calibration in radiotherapy treatment planning; *Phys. Med. Biol.* 57 (2012) 1173-1190.



Electron Density Phantom (QRM-EDP)



Electron density vs. HU (at 120 kVp)



QRM EDP placed in optional available water equivalent Oval Phantom Body