phantomx

Article Number
53-03

Made in Germany

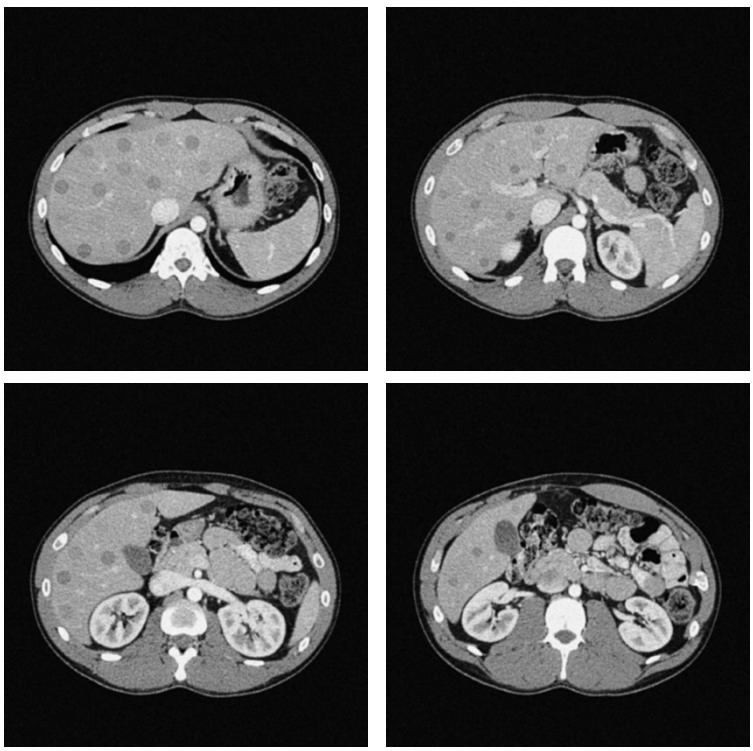
ABDOMEN PHANTOM PV LC SPHERES

Age Category	Adult
Body Region	Abdomen
Target Modality	CT
Diagnostic Features	Masses, spherical lesions

This phantom simulates a contrast medium enhanced abdomen in portal venous phase. It covers the eleventh thoracic vertebra to the fourth lumbar vertebra (partially included).

The phantom can be used in CT (including CBCT) to evaluate and optimize imaging performance and post-processing applications, including AI-enabled applications. It is also suited for training purposes.

The phantom provides a detailed and realistic simulation of soft and bone tissue. Air voids are filled with a cellulose-polymer composite of approx. -160 HU.



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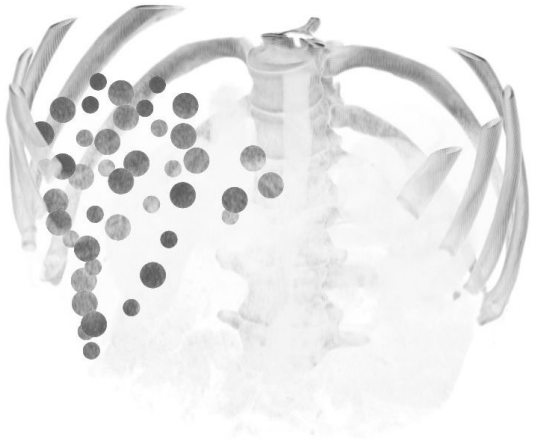

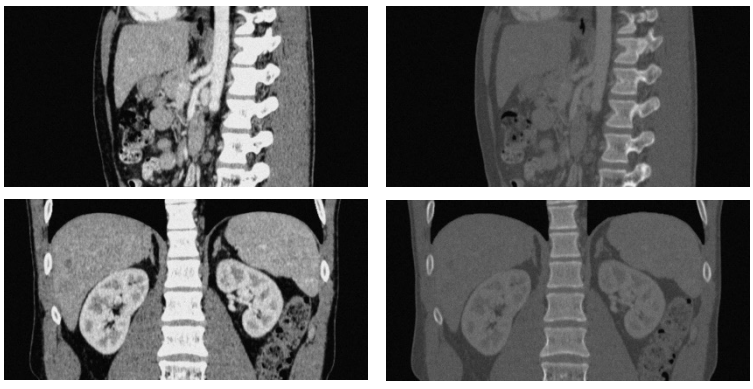

Specifications

Size	Approx. 268 x 189 x 150 mm 10.6 × 7.4 × 5.9 in
Weight	Approx. 4950 g 10.9 lb
Base material	Cellulose-polymer composite
Optimal tube voltage	120 kVp (cf page 6) - adaptable upon request -

Diagnostic features

Realistic simulation of vasculature, bone and soft tissues, including the liver, gallbladder, pancreas, spleen, adrenals, kidneys, stomach, small intestine and colon.

42 spherical liver lesions in 7 sections.

Lesion diameter:	8 mm and 12 mm
Nominal lesion contrasts*:	10, 20, 30 and 40 HU at 120 kVp

Section 1:	4 lesions	Section 5:	3 lesions
Section 2:	15 lesions	Section 6:	3 lesions
Section 3:	9 lesions	Section 7:	2 lesions
Section 4:	6 lesions		

**cf. page 6 for measurement of lesion contrast*

For more information visit
www.phantomx.de

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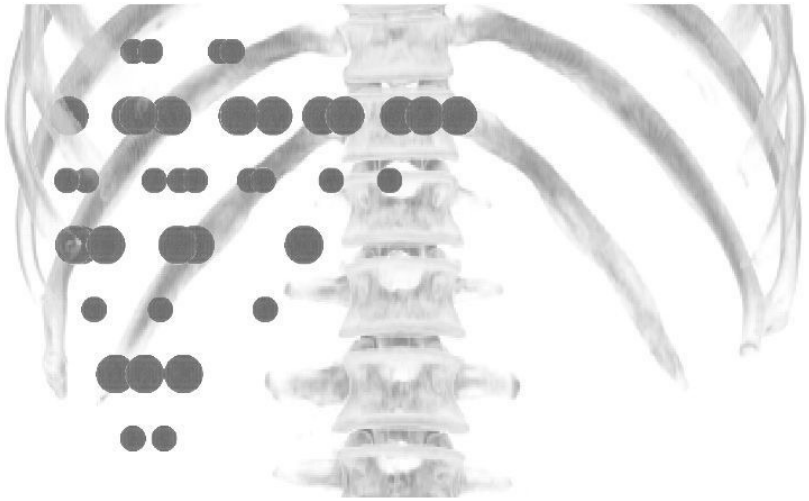
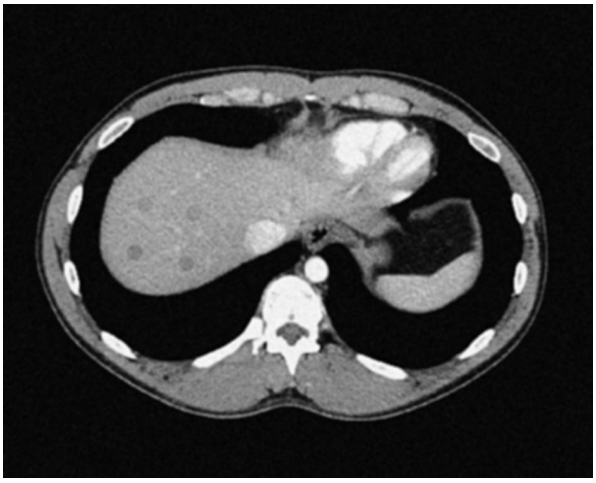
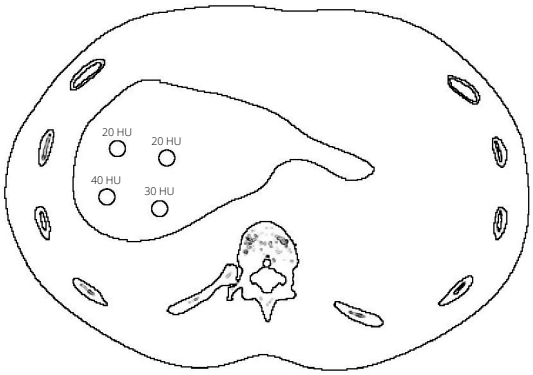
Section 1
Section 2
Section 3
Section 4
Section 5
Section 6
Section 7

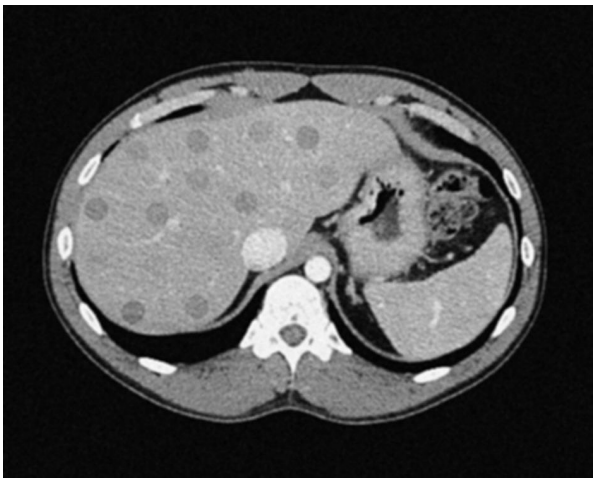




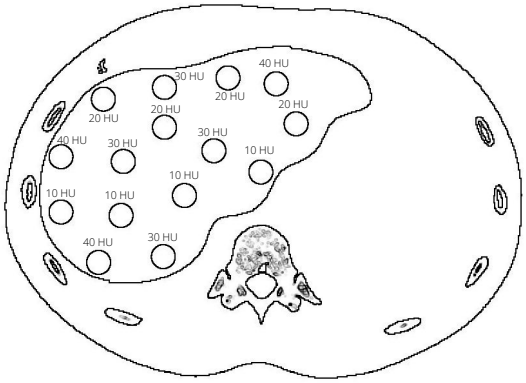
Exemplary image of section 1



Drawing indicates nominal lesion contrast to surrounding liver. Larger lesions have 12 mm diameter, smaller lesions have 8 mm diameter.



Exemplary image of section 2



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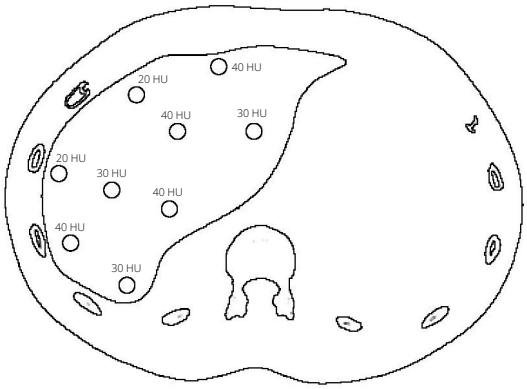
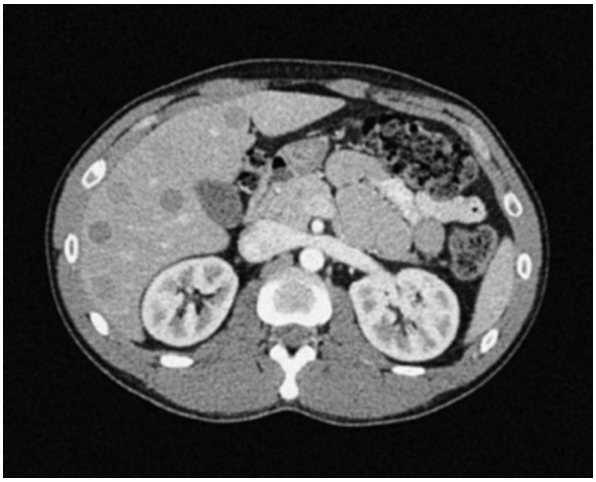
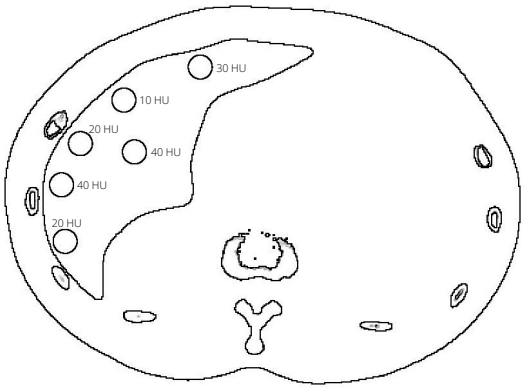
Exemplary image of section 3



Drawing indicates nominal lesion contrast to surrounding liver. Larger lesions have 12 mm diameter, smaller lesions have 8 mm diameter.

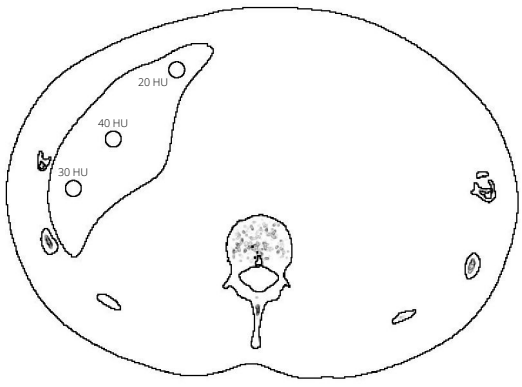


Exemplary image of section 4



Drawing indicates nominal lesion contrast to surrounding liver. Larger lesions have 12 mm diameter, smaller lesions have 8 mm diameter.

Exemplary image of section 5



Drawing indicates nominal lesion contrast to surrounding liver. Larger lesions have 12 mm diameter, smaller lesions have 8 mm diameter.

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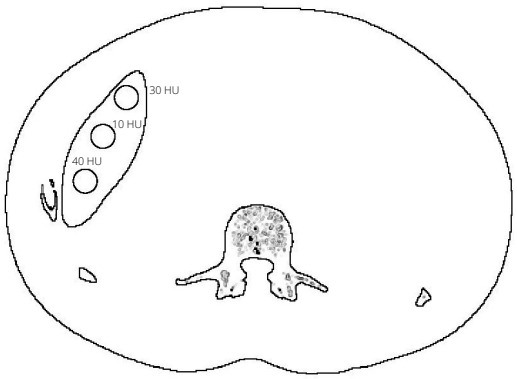
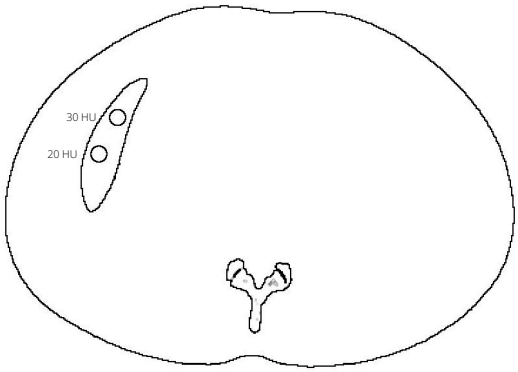
Exemplary image of section 6



Drawing indicates nominal lesion contrast to surrounding liver. Larger lesions have 12 mm diameter, smaller lesions have 8 mm diameter.

Exemplary image of section 7



Drawing indicates nominal lesion contrast to surrounding liver. Larger lesions have 12 mm diameter, smaller lesions have 8 mm diameter.

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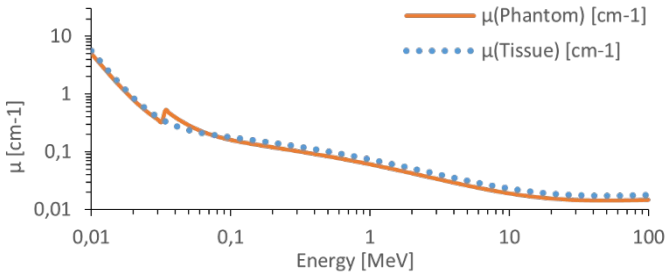
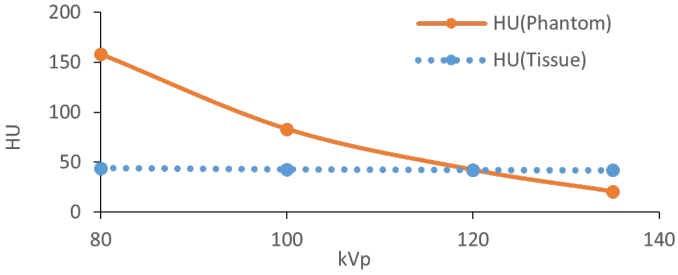
Attenuation properties

Soft Tissue

Linear attenuation coefficients [cm^{-1}] (calculated)

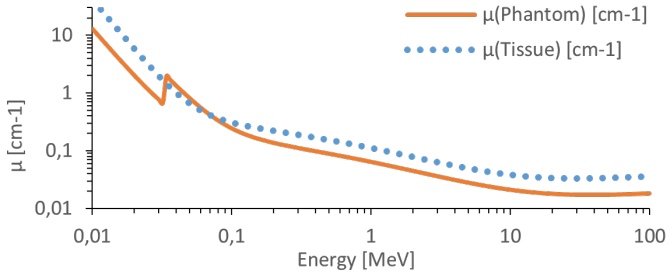


Hounsfield units (calculated)

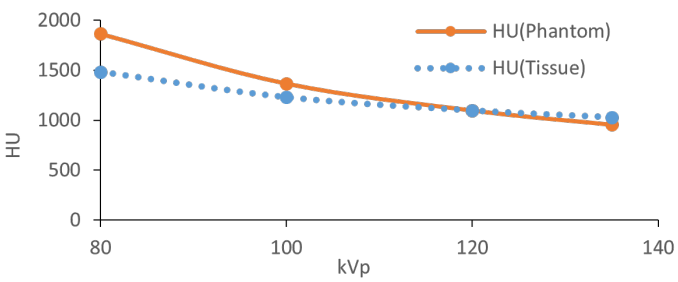


Bone Tissue

Linear attenuation coefficients [cm^{-1}] (calculated)



Hounsfield units (calculated)



Tissue Reference: Woodard HQ, White DR. The composition of body tissues. Br J Radiol. 1986.

General indications

- The phantom is made of a cellulose-polymer composite material with properties similar to hardwood. If handled carefully, it will last a long time.
- The phantom is coated with a protective layer. If the protective layer is undamaged, the phantom can be cleaned using a damp cloth (water or mild detergent).
- Protect from direct sunlight.
- Maintain a storage temperature of 10 °C to 30 °C. If the phantom is exposed to temperatures below -10 °C or above 45 °C, it can be severely damaged.
- The phantom is not equipped for dose measurements with dosimeters and it is not suited for material characterization with dual energy CT.
- The phantom is not certified as medical device.
- Air voids are filled with cellulose-polymer composite of approx. -160 HU.
- Handle with care to prevent injury or damage.
- If external damage is observed, it is recommended to consult PhantomX.

Lesion contrast

Lesion contrast can vary based on protocol settings, including dose and reconstruction algorithm, as well as the chosen measurement method.

To measure lesion contrast, it is recommended to define volumes of interest (VOIs) that encompass most of the lesion and adjacent tissue. Edges of the lesion should be avoided, and measurements should be averaged across multiple scans to improve reliability, given the inherent noisiness of low-contrast measurements.

The VOI should cover at least one-third of the lesion volume, and the VOI for adjacent tissue should be equal to or larger than the lesion volume.

Phantom based on modified data, originally published by Roth H et al. A new 2.5 D representation for lymph node detection in CT. The Cancer Imaging Archive (2015) DOI: 10.7937/K9/TCIA.2015.AQIIDCNM (CC BY 3.0)