



## HEAD PHANTOM WITH CERVICAL SPINE

All RSD Anthropomorphic Body Sections feature the same RSD Tissue and RSD Bone that is found in TAKE-APART PIXY. The RS-108 and RS-108T allow for tremendous flexibility in training. They are a rugged sectional representation of an average male, 175 cm (5'9") tall, weighing 74 kg (162 lbs). They provide a comprehensive platform for evaluation of imaging systems and imaging techniques under realistic conditions.

### Custom Pathology and Injury Available Including:

- Depressed skull fracture at any desired location
- Tumor
- Lesion
- Additional custom pathologies available based on user requirements

### Modalities:

CT	X-Ray	Fluoroscopy
CBCT	Dental X-Ray	

### Anatomy:

- Skull and spine composed of Cortical (TS-1003) and trabecular bone (TS-1002) equivalent
- Brain material composed of RSD ART soft tissue material (TS-1001-T)
- Spinal cord material made of ART soft tissue material with density of 1.1 g/cc
- Oral, trachea, and sinus cavities filled with Styrofoam



## Repeatable. Durable. Necessary.

Radiology Support Devices, Inc., represents over 30 years of product innovation, development, and testing to deliver the finest human equivalent radiological subjects. As the original standard, our phantoms have proven to be consistent and reliable devices that endure the most rigorous use.

### SIZE (based on an average ADULT SIZED MALE)

HEIGHT	27.94 cm   11 in
WIDTH	20.35 cm   8 in
WEIGHT	6.35 kg   14 lbs

### MATERIAL

MATERIAL	TRANSPARENCY	DENSITY (g/cc)
RSD SOFT TISSUE	OPAQUE	1.08
RSD SOFT TISSUE	TRANSPARENT	1.10
RSD CORTICAL BONE		1.18
RSD TRABECULAR BONE		1.17

#### RSD SOFT TISSUE

Energy (MeV)	mean HU	Calculated $\mu$	$\mu$ (ICRU 44)	% difference	Ratio
00.08	60.30	0.1948	0.1932	0.0080	0.9921
00.10	52.88	0.1797	0.1795	0.0015	0.9985
00.12	57.10	0.1717	0.1709	0.0044	0.9956
00.14	52.95	0.1623	0.1624	0.0007	1.0007
00.20	--	0.1477	0.1439	0.0261	0.9746
00.30	--	0.1245	0.1246	0.0004	1.0004
00.60	--	0.0950	0.0941	0.0101	0.9900
00.80	--	0.0825	0.0826	0.0013	1.0013
01.00	--	0.0744	0.0743	0.0018	0.9982
02.00	--	0.0520	0.0519	0.0018	0.9982
03.00	--	0.0351	0.0357	0.0171	1.0174
06.00	--	0.0288	0.0291	0.0088	1.0088
08.00	--	0.0252	0.0255	0.0098	1.0099
10.00	--	0.0229	0.0232	0.0149	1.0151
15.00	--	0.0203	0.0203	0.0015	0.9985
20.00	--	0.0189	0.0189	0.0017	1.0017

#### RSD CORTICAL BONE

Energy (MeV)	mean HU	Calculated $\mu$	$\mu$ (ICRU 44)	% difference	Ratio
00.08	1365	0.4345	0.4280	0.0151	0.9851
00.10	1048	0.3496	0.3562	0.0184	1.0188
00.12	0977	0.3211	0.3274	0.0191	1.0195
00.14	0902	0.2932	0.2986	0.0180	1.0184
00.20	--	0.2511	0.2513	0.0009	1.0009
00.30	--	0.2155	0.2137	0.0084	0.9916
00.60	--	0.1596	0.1598	0.0011	1.0011
00.80	--	0.1403	0.1402	0.0010	0.9990
01.00	--	0.1274	0.1261	0.0106	0.9895
02.00	--	0.0883	0.0885	0.0017	1.0017
03.00	--	0.0611	0.0625	0.0229	1.0235
06.00	--	0.0512	0.0525	0.0246	1.0253
08.00	--	0.0468	0.0474	0.0120	1.0121
10.00	--	0.0446	0.0444	0.0039	0.9962
15.00	--	0.0410	0.0409	0.0016	0.9984
20.00	--	0.0393	0.0397	0.0102	1.0103

#### RSD SPONGIOSA

Energy (MeV)	mean HU	Calculated $\mu$	$\mu$ (ICRU 44)	% difference	Ratio
00.08	551	0.2849	--	--	--
00.10	515	0.2586	--	--	--
00.12	439	0.2337	--	--	--
00.14	318	0.1541	--	--	--

### Linear Attenuation Data:

Monte Carlo simulation was used to calculate linear attenuation coefficients as a function of beam. Monte Carlo results were validated with linear attenuation coefficients derived from Hounsfield Unit measurements at discrete energy levels. RSD Phantom material linear attenuation data was compared to NIST data using ICRU Report 44 compositions of human tissues. NIST data was interpolated when necessary.



Figure 1

**Figure 1: Axial CT scan of RS-108.** ROIs are drawn in the Trabecular bone and soft tissue material to measure mean CT numbers. Linear attenuation coeffs were calculated from mean CT numbers.

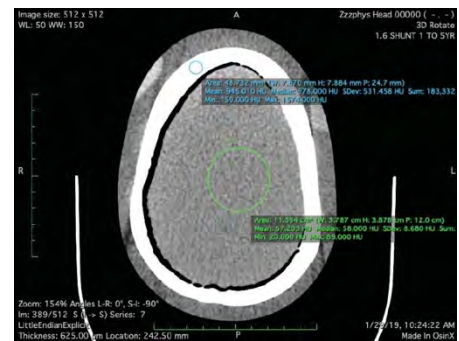


Figure 2

**Figure 2: Axial CT scan of RS-108.** ROIs are drawn in the Cortical bone and soft tissue material to measure mean CT numbers. Linear attenuation coeffs were calculated from mean CT numbers.

### MODEL NUMBERS:

RS-108	Opaque Head with Cervical Spine
RS-108T	Transparent Head with Cervical Spine

**PLEASE CONTACT RSD FOR CUSTOM ORDERS AND REFURBISHMENT**