

Table A.1 ID listings, medium, density, and mass of each organ/tissue.

Organ ID	Organ/tissue	Medium	Density* (g/cm ³)	Mass (g)	
				Male	Female
Adrenals:					
1	Adrenal, left	43	1.030	7.00	5.73
2	Adrenal, right	43	1.030	7.00	7.27
Airways (and mouth):					
3	Anterior nasal passage (ET ₁)	45	1.030 [†]	11.03	4.32
4	Posterior nasal passage down to larynx (ET ₂)	45	1.030 [†]	28.41	14.29
5	Oral mucosa, tongue	29	1.050	30.73	18.45
6	Oral mucosa, lips and cheeks	29	1.050	5.10	4.00
7	Trachea	45	1.030	10.01	7.99
8	Bronchi	45	1.030 [†]	66.31	8.69
Blood vessels:					
9	Blood vessels, head	28	1.060	0.85	6.06
10	Blood vessels, trunk	28	1.060	271.93	242.38
11	Blood vessels, arms	28	1.060	15.72	43.24
12	Blood vessels, legs	28	1.060	83.04	92.64
Bones:					
Arm bones:					
Humeri, upper half:					
13	Humeri, proximal end, cortical bone	2	1.920	135.26	112.60
14	Humeri, upper half, spongiosa	3	‡	184.86	111.90
15	Humeri, upper half, medullary cavity	22	0.980	33.48	19.89
Humeri, lower half:					
16	Humeri, lower half, cortical	2	1.920	128.03	102.21
17	Humeri, lower half, spongiosa	4	‡	59.73	52.78
18	Humeri, lower half, medullary cavity	23	0.980	37.13	20.55
Ulnae and radii:					
19	Ulnae and radii, cortical	2	1.920	270.80	155.14
20	Ulnae and radii, spongiosa	5	‡	181.91	91.24
21	Ulnae and radii, medullary cavity	24	0.980	22.67	33.59
Wrists and hand bones:					
22	Wrists and hand bones, cortical	2	1.920	179.74	104.08
23	Wrists and hand bones, spongiosa	6	‡	139.59	72.84
Clavicles:					
24	Clavicles, cortical	2	1.920	47.78	32.50
25	Clavicles, spongiosa	7	‡	53.06	40.45
Cranium:					
26	Cranium, cortical	2	1.920	562.85	403.60
27	Cranium, spongiosa	8	‡	451.06	417.09
Leg bones:					
Femora, upper half:					
28	Femora, upper half, cortical	2	1.920	261.68	247.75
29	Femora, upper half, spongiosa	9	‡	472.05	225.05
30	Femora, upper half, medullary cavity	22	0.980	25.78	39.51
Femora, lower half:					
31	Femora, lower half, cortical	2	1.920	294.09	232.47
32	Femora, lower half, spongiosa	10	‡	438.57	174.67
33	Femora, lower half, medullary cavity	23	0.980	80.89	55.43
Tibiae, fibulae, and patellae:					
34	Tibiae, fibulae, and patellae, cortical	2	1.920	531.35	618.85

Table A.1 (continued)

Organ ID	Organ/tissue	Medium	Density* (g/cm ³)	Mass (g)	
				Male	Female
35	Tibiae, fibulae, and patellae, spongiosa	11	‡	729.38	586.52
36	Tibiae, fibulae, and patellae, medullary cavity	25	0.980	78.67	87.65
	Ankles and foot bones:				
37	Ankles and foot bones, cortical	2	1.920	232.56	171.75
38	Ankles and foot bones, spongiosa	12	‡	507.78	270.35
	Mandible:				
39	Mandible, cortical	2	1.920	76.12	44.94
40	Mandible, spongiosa	13	‡	73.90	34.67
	Pelvis:				
41	Pelvis, cortical	2	1.920	398.62	259.84
42	Pelvis, spongiosa	14	‡	681.18	445.07
	Ribs:				
43	Ribs, cortical	2	1.920	365.16	162.87
44	Ribs, spongiosa	15	‡	520.06	258.96
	Scapulae:				
45	Scapulae, cortical	2	1.920	221.13	120.45
46	Scapulae, spongiosa	16	‡	192.21	96.87
	Spine:				
	Cervical spine:				
47	Cervical spine, cortical	2	1.920	102.92	70.88
48	Cervical spine, spongiosa	17	‡	73.55	72.81
	Thoracic spine:				
49	Thoracic spine, cortical	2	1.920	286.58	203.78
50	Thoracic spine, spongiosa	18	‡	335.34	252.56
	Lumbar spine:				
51	Lumbar spine, cortical	2	1.920	186.19	154.62
52	Lumbar spine, spongiosa	19	‡	302.07	261.28
	Sacrum:				
53	Sacrum, cortical	2	1.920	109.23	0.00
54	Sacrum, spongiosa	20	‡	173.51	140.44
	Sternum:				
55	Sternum, cortical	2	1.920	9.89	1.67
56	Sternum, spongiosa	21	‡	56.31	47.41
	Cartilage:				
57	Cartilage, head	26	1.100	15.96	15.78
58	Cartilage, trunk	26	1.100	88.67	313.61
59	Cartilage, arms	26	1.100	5.91	98.51
60	Cartilage, legs	26	1.100	34.73	222.61
61	Brain	32	1.050 [§]	1450.00	1300.00
	Breast:				
62	Breast, left, adipose tissue	49	0.950	7.50	150.01
63	Breast, left, glandular tissue	48	1.020	4.99	100.00
64	Breast, right, adipose tissue	49	0.950	7.50	150.01
65	Breast, right, glandular tissue	48	1.020	4.99	100.00
	Eyes:				
66	Eye lens, left	34	1.050 [¶]	0.19	0.21
67	Eye bulb, left	34	1.050 [¶]	7.29	7.30
68	Eye lens, right	34	1.050 [¶]	0.19	0.19

(continued on next page)

Table A.1 (continued)

Organ ID	Organ/tissue	Medium	Density* (g/cm ³)	Mass (g)	
				Male	Female
69	Eye bulb, right	34	1.050 [¶]	7.33	7.30
	Gall bladder:				
70	Gall bladder wall	45	1.030	13.92	10.24
71	Gall bladder contents	45	1.030	54.08	45.75
	Gastrointestinal tract:				
72	Stomach wall	36	1.040 ^{**}	149.99	140.00
73	Stomach contents	51	1.040 ^{**}	250.01	230.00
74	Small intestine wall	37	1.040 ^{**}	650.00	599.99
75	Small intestine contents	51	1.040 ^{**}	350.02	280.01
76	Ascending colon wall	38	1.040 ^{**}	89.99	90.00
77	Ascending colon contents	51	1.040 ^{**}	55.02	100.01
78	Transverse colon wall, right	38	1.040 ^{**}	60.00	55.00
79	Transverse colon contents, right	51	1.040 ^{**}	95.00	59.99
80	Transverse colon wall, left	38	1.040 ^{**}	60.00	55.00
81	Transverse colon contents, left	51	1.040 ^{**}	40.01	30.01
82	Descending colon wall	38	1.040 ^{**}	89.99	90.00
83	Descending colon contents	51	1.040 ^{**}	35.00	50.00
84	Sigmoid colon wall	38	1.040 ^{**}	40.01	45.01
85	Sigmoid colon contents	51	1.040 ^{**}	74.97	79.99
86	Rectum wall	38	1.040 ^{**}	29.98	24.99
	Heart:				
87	Heart wall	33	1.050 [§]	329.98	250.00
88	Heart contents (blood)	28	1.060	510.01	370.01
	Kidneys:				
	Kidney, left:				
89	Kidney, left, cortex	35	1.050 [§]	107.12	104.63
90	Kidney, left, medulla	35	1.050 [§]	38.25	37.37
91	Kidney, left, pelvis	35	1.050 [§]	7.63	7.48
	Kidney, right:				
92	Kidney, right, cortex	35	1.050 [§]	109.92	87.87
93	Kidney, right, medulla	35	1.050 [§]	39.25	31.38
94	Kidney, right, pelvis	35	1.050 [§]	7.87	6.28
95	Liver	30	1.050 [¶]	1800.01	1400.00
	Lungs:				
	Lung, left				
96	Lung, left, blood	28	1.060	79.01	59.22
97	Lung, left, tissue	50	‡	477.74	376.78
	Lung, right				
98	Lung, right, blood	28	1.060	71.54	42.27
99	Lung, right, tissue	50	‡	580.08	471.74
	Lymphatic nodes:				
100	Lymphatic nodes, ET airways	47	1.030	2.26	1.34
101	Lymphatic nodes, thoracic airways	47	1.030	6.40	3.86
102	Lymphatic nodes, head	47	1.030	5.98	2.58
103	Lymphatic nodes, trunk	47	1.030	104.40	57.66
104	Lymphatic nodes, arms	47	1.030	7.83	3.90
105	Lymphatic nodes, legs	47	1.030	11.10	9.80
	Muscle tissue:				
106	Muscle, head	29	1.050	1217.81	401.97

Table A.1 (continued)

Organ ID	Organ/tissue	Medium	Density* (g/cm ³)	Mass (g)	
				Male	Female
107	Muscle, trunk	29	1.050	15,006.82	8518.22
108	Muscle, arms	29	1.050	2750.53	1524.87
109	Muscle, legs	29	1.050	10,024.97	7054.94
110	Oesophagus (wall)	44	1.030	40.01	34.99
	Ovaries:				
111	Ovary, left	42	1.040**	n.a.	5.50
112	Ovary, right	42	1.040**	n.a.	5.50
113	Pancreas	31	1.050 [¶]	140.00	120.01
114	Pituitary gland	45	1.030	0.60	0.60
115	Prostate	46	1.030	17.01	n.a.
	Residual tissue:				
116	Residual tissue, head	49	0.950	1048.51	886.07
117	Residual tissue, trunk	49	0.950	12,370.04	11,803.12
118	Residual tissue, arms	49	0.950	1643.47	2042.40
119	Residual tissue, legs	49	0.950	5396.47	8864.84
	Salivary glands:				
120	Salivary glands, left	45	1.030	42.49	34.99
121	Salivary glands, right	45	1.030	42.49	35.01
	Skin:				
122	Skin, head	27	1.090	291.34	173.39
123	Skin, trunk	27	1.090	1465.21	1004.12
124	Skin, arms	27	1.090	639.03	469.52
125	Skin, legs	27	1.090	1332.43	1074.43
126	Spinal cord	45	1.030	36.62	18.63
127	Spleen	39	1.040**	149.99	130.00
128	Teeth	1	2.750	50.04	40.01
	Testes:				
129	Testis, left	42	1.040**	17.48	n.a.
130	Testis, right	42	1.040**	17.52	n.a.
131	Thymus	45	1.030	24.99	19.99
132	Thyroid	40	1.040**	19.99	17.00
133	Tongue (inner part)	29	1.050	42.28	41.55
134	Tonsils	45	1.030	3.01	3.00
	Ureters:				
135	Ureter, left	45	1.030	8.51	7.51
136	Ureter, right	45	1.030	7.49	7.49
137	Urinary bladder wall	41	1.040**	50.01	40.00
138	Urinary bladder contents	52	1.040**	200.00	200.00
139	Uterus/cervix	46	1.030	n.a.	80.01
140	Air inside body	53	0.001293	0.20	0.05
141	Skin at top and bottom	27	1.090	154.3	28.42

ET, extrathoracic; n.a., not applicable.

* From ICRU Report 46 (ICRU, 1992).

† Density of trachea.

‡ Mass density different for male and female phantoms (see Paras 29 and 36).

§ Arithmetic mean of the densities of brain, heart, and kidneys.

¶ Arithmetic mean of the densities of eyes, liver, and pancreas.

** Arithmetic mean of the densities of stomach, small intestine, large intestine, ovaries, spleen, testes, thyroid, and urinary bladder.

