APPENDIX C
DENSITY CONVERSION INFORMATION

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TABLE C.1 – Uncompacted and Compacted Densities of Different Materials

MATERIAL	UNCOMPACTED		COMPACTED	
	lbs/cubic yard	kg/cubic metre	lbs/cubic yard	kg/cubic metre
Paper				
Newsprint	360-505	214-300	720-1010	428-600
Ledger paper: flat	375-465	223-277	755-925	450-550
Ledger paper: crumpled	110-205	65-122	325	193
Computer printout	655	390	1310	779
Laser printout	430	255	865	513
Mixed office paper: flat	380	226	755	449
Mixed office paper: crumpled	110-208	68-122	610	363
Corrugated cardboard	75-100	45-60	525-700	312-416
Boxboard	-	-	837	496
Waste paper	70-90	42-53	215-270	
Metals				
Ferrous cans: whole	150	89	-	-
Ferrous cans: flattened	330	208	405-485	240-289
Aluminum cans: whole	50-75	-	350-430	208-256
Aluminum cans: flattened	175-250	-	350-430	208-256
Mixed food & beverage containers	175	104	-	-
Scrap metal: heavy	4050	2403	-	-
Scrap metal: light	1350	801	-	-
Scrap metal: mixed	1517-1685	900-1000	-	-
Scrap metal: tin	160	95	-	-

MATERIAL	UNCOMPACTED		COMPACTED	
	lbs/cubic yard	kg/cubic metre	lbs/cubic yard	kg/cubic metre
Glass				
Glass containers: whole, bin	500-600	296-356	-	-
Glass containers: flint bottles	500-515	296-305	-	-
Glass containers: Green bottles	550-650	326-385	-	-
Glass containers: Amber bottles	540-550	320-326	-	-
Semi-crushed glass (manually)	100-1080	593-640	-	-
Crushed glass (mechanically, bin)	-	-	1800-1980	1067-1174
Organics				
Food: kitchen waste	800-900	475-534	-	-
Solid fats & liquid fats/ greases	1450-1500	860-890	-	-
Leaves (loose)	250-450	148-237	450-665	267-395
Brush (loose)	250-350	148-208	-	-
Brush (chips)	500	297	-	-
Grass clippings	665-740*	395-439	1050-1110	623-659
Yard waste (mixed)	300-600*	176-356	1037	615
Wood				
Loose dimensional lumber	244	145	-	-
Pallets	286	170	-	-
Sawdust	484	288	-	-
Wood chips	300	298	-	-
Shavings	405	241	-	-
Trimmings	970	377	-	-
Crates	182	108		
Plastics				
PET bottles (whole)	30-45	18-27	515	306
PET bottles (flattened)	-	-	75	44
PET bottles (baled)	-	-	400-515	237-306
HDPE bottles (whole)	25-35	15-21	-	-
HDPE bottles (flattened)	-	-	65	39
HDPE bottles (baled)	-	-	324-400	192-237
Odd plastics	50	30	700	415
Film (baled)	-	-	849	504

MATERIAL	UNCOMPACTED		COMPACTED	
	lbs/cubic yard	kg/cubic metre	lbs/cubic yard	kg/cubic metre
Textiles				
Mixed/scrap textiles	170-300	100-178	480	285
Ash				
Mixed ashes	1096-1400	650-830	-	-
Fly ash	1180-1517	700-900		
Soil/garbage				
Waste soil	3720	2210		
Garbage				
Garbage/ mixed waste	600-800	343-476	1200-1500	700-900

Source: Recycling Council of Ontario, USEPDA Reports, Enviros RIS In-House Reports

TABLE C.2 – METRIC AND IMPERIAL CONVERSIONS

One cubic yard = 0.764 cubic metres
1 kilogram = 2.2 pounds
1 tonne = 1000 kg = 2200 pounds

TABLE C.3 – DENSITY AND WEIGHT OF HOUSEHOLD SPECIAL WASTE

Paint waste:	1.47 kg/ litre
Motor oil/ engine coolant:	1kg/ litre
Propane tanks:	one - 1 lb tank = 9.08 kg
Lead acid batteries (car):	17.9 kg/unit
Lead acid batteries (truck):	6.95 kg/ unit
Lead acid batteries (motorcycle):	4.32 kg/unit
Dry cell/ household batteries:	0.0588 kg/ unit
Motor oil filters:	1.5 lb or 0.68 kg (average weight)
Fire extinguishers:	one-10 lb unit: 4.5 kg
Misc. HSW (excluding motor oil):	1.235 kg/ litre

Source: USEPA Report and Region of Peel, Ontario

TABLE C.4 – WEIGHT OF WHITE GOODS

Appliance	Weight	
	Pounds (lbs)	Kilograms (kg)
Air conditioners (room)	**64.2**	**29.2**
Dishwashers	92	41.8
Dryers (clothes)	130	59.1
Freezers	193	87.7
Microwave ovens	50	22.7
Ranges	181.1	82.3
Refrigerators	267	121.4
Washers (clothes)	177	80.5
Water heaters	131	59.5

Source: USEPA Report

TABLE C.5 –WEIGHT OF DIFFERENT CONTAINERS OF GARBAGE (MIXED WASTE)

Size of Container	Weight (tonnes)	
(cubic yards)	Uncompacted	Compacted
2	0.41	0.82
3	0.61	1.22
4	0.81	1.63
6	1.22	2.44
8	1.63	3.25

Source: Enviros RIS In-House Files

TABLE C.6 –WEIGHTS OF DIFFERENT TRUCKS

Truck Capacity (cubic yards)	Weight (tonnes) Uncompacted
12	0.9
20	4.6-6
25	10.2

Source: Enviros RIS In-House Files

Notes:

- Truck sizes typically range from 12 cubic yards to 25-30 cubic yards
- Payload depends on the number of truck axles, i.e., a truck with two axles can carry more than a truck with one axle.
- A truck typically achieves a 2:1 compaction ratio.