WDF - COMPOSITION & ULTIMATE ANALYSIS - EAST ROCKINGHAM PJ

ITEM	DESCRIPTION OF WDF FEED [1] [2]	AS-REC. WEIGHT (%)	AS-REC. WEIGHT (T) [1]	H2O (% Wt.)	AVG. H20 (% Wt.)	CV [3] (kJ/kg)	AVG. CV (kJ/kg)	WDF ULTIMATE ANALYSIS (DRY BASIS - PERCENT BY WT.) C	H	O	N	S	Cl	Ash	Fe/Al	CALCULATE WDF AS-RECEIVED ULTIMATE ANALYSIS (WET BASIS - BY MASS) C	H	O	N	S	Cl	HM [7]	Ash	Fe/Al	H2O	TTL
1	MIXED FOOD	14.21	22,127	70.00	9.95	4,033	573	48.0	6.4	37.6	2.6	0.4	-	5.0	-	3186.29	424.84	2495.93	172.59	26.55	0.00	70.968	260.94	0.00	15488.90	22,127.00
2	MIXED PAPER / CARDBOARD	20.47	26,940	10.00	2.05	15,277	3,127	43.4	5.8	44.3	0.3	0.2	-	6.0	-	10522.76	1406.27	10740.98	72.74	48.49	0.00	86.405	1368.35	0.00	2694.00	26,940.00
3	MIXED WOOD	28.36	34,527	20.00	5.67	14,918	4,231	49.6	6.0	42.7	0.2	-	-	1.5	-	13700.31	1657.30	11794.42	55.24	0.00	0.00	110.739	303.58	0.00	6905.40	34,527.00
4	MIXED TEXTILE	9.07	11,708	10.00	0.91	16,851	1,528	48.0	6.4	40.0	2.2	0.2	-	3.2	-	5057.86	674.38	4214.88	231.82	21.07	0.00	37.5513	299.64	0.00	1170.80	11,708.00
5	UNSORTED PLASTIC [4]	13.95	18,167	-	-	36,890	5,146	87.1	8.4	4.0	0.2	-	-	0.3	-	15823.46	1526.03	726.68	36.33	0.00	0.00	58.2674	-3.77	0.00	0.00	18,167.00
6	CHLORINATED PLASTIC [5]	0.09	111	-	-	21,918	20	45.2	5.6	1.6	0.1	0.1	45.4	2.0	-	50.17	6.22	1.78	0.11	0.11	50.39	0.3560	1.86	0.00	0.00	111.00
7	GARDEN / GREEN TRIMMINGS	9.95	12,902	60.00	5.97	5,844	581	46.0	6.0	38.0	3.4	0.3	-	6.3	-	2373.97	309.65	1961.10	175.47	15.48	0.00	41.3808	283.75	0.00	7741.20	12,902.00
8	MIXED RUBBER [11]	1.05	1,271	-	-	36,890	387	69.7	8.7	-	-	1.6	-	20.0	-	885.89	110.58	0.00	0.00	20.34	0.00	4.0765	250.12	0.00	0.00	1,271.00
9	OILY RAGS - TEXTILE CONTENT	1.25	1,513	10.00	0.13	42,377	530	48.0	6.4	40.0	2.2	0.2	-	3.2	-	653.62	87.15	544.68	29.96	2.72	0.00	4.8527	38.72	0.00	151.30	1,513.00
10	OILY RAGS - OIL CONTENT [6]	0.27	332	-	-	30,000	81	85.4	14.2	-	-	-	-	0.4	-	283.53	47.14	0.00	0.00	0.00	0.00	1.0648	0.26	0.00	0.00	332.00
11	FERROUS METALS	0.10	131	-	-	-	-	-	-	-	-	-	-	-	100.0	0.00	0.00	0.00	0.00	0.00	0.00	0.4202	-0.42	131.00	0.00	131.00
12	NON-FERROUS / ALUMINUM	0.10	130	-	-	-	-	-	-	-	-	-	-	-	100.0	0.00	0.00	0.00	0.00	0.00	0.00	0.4170	-0.42	130.00	0.00	130.00
13	GLASS	0.15	199	-	-	-	-	-	-	-	-	-	-	100.0	-	0.00	0.00	0.00	0.00	0.00	0.00	0.6383	198.36	0.00	0.00	199.00
14	INERTS (SAND, RUBBLE, BRICKS, CONCRE	0.98	1,289	-	-	-	-	-	-	-	-	-	-	100.0	-	0.00	0.00	0.00	0.00	0.00	0.00	4.1342	1284.87	0.00	0.00	1,289.00
	TOTAL / AVERAGE	100.00 (%)	131,347 (T)		24.67 (%)		15,653 (KJ/KG)							ELEMENT BY MASS		52537.85	6249.55	32480.45	774.26	134.77	50.39	421.27	4285.86	261.00	34151.60	131,347.00
														ELEMENT BY PCT.		39.9993	4.7580	24.7287	0.5895	0.1026	0.0384	0.3207	3.2630	0.1987	26.0011	100.00

CALCULATE AS-RECEIVED HM CONTENT OF WDF; BY CONSTITUENT [7] [8] [9] [10] (WET BASIS - BY MASS)

	As	Cd	Co	Cr	Cu	Hg	Mn	Ni	Pb	Sb	Sn	Tl	Vn	Zn	TTL
ELEMENT BY MASS	0.77	1.37	0.52	7.64	52.80	0.04	30.45	1.95	71.58	5.25	44.53	90.67	2.05	111.64	421.27
ELEMENT BY PCT.	0.00059	0.00104	0.00040	0.00582	0.04020	0.00003	0.02318	0.00148	0.05450	0.00400	0.03390	0.06903	0.00156	0.08500	0.3207

NOTES:

(1) Based upon NEC WDF composition/specification Rev-D, dated 30-03-12.
(2) Unless noted otherwise; the moisture content, ultimate analysis and CV (as-received) are based upon Perry's Chemical Engineers Handbook, 8th Edition, Robert H. Perry & Don Green, McGraw-Hill, 2008 (ISBN-13:978-0-07-142294-9).
(3) Reported CV is at nil contingency factor.
(4) Based upon LD and HD plastics consisting primarily of C+O+H compounds,including polyolefins such as the polyethylenes, the polyethylene copolmers (including polypropylene, polybutene-1 and poly 4-methylpentene), plus polystyrene. Includes up to 1% by weight of chlorinated plastics, which may be separately itemized in item "6".
(5) PVC content of the waste feed is calculated at 0.0384% wt.. Limit is 1% wt.
(6) Based upon ultimate analysis nominated by NEC.
(7) Heavy metal (HM) content in waste (at avg. 0.3207% wt. of as-received MSW feed) and HM constituent breakdown (%) wt.) is based upon "Best Estimate g/T" of Tables 2.25 & 2.26 of the report "Review of Environmental & Health Effects of Waste Management" published by UK-DEFRA, 2004 (DEFRA Code: PB9052A).
(8) HM content of the waste feed is calculated at 0.3207% wt.. Limit is ≈2% wt.
(9) HM content in waste in Notes "7" & "8" above is approx 150% greater than actual test results of 14 Danish WtE plants per averaged results of Table 2 of the report "Heavy Metal Content of Combustible Municipal Solid Waste in Denmark", Riber, Fredriksen, Christensen; 2005 (ISSN 0734-242X).
(10) HM content in waste in Notes "7" to "9" above though adopted for "worst-case" design purposes is still ≈10-fold (x10) greater than expected actual; as for the East Rockingham Pj feed high in HM content (batteries, printed circuit board, PVC, etc) will be removed by an upstream mechanical recycling facility (MRF).
(11) Rubber content of the waste feed is calculated at 1% wt.. Limit is ≈15% wt.
(12) There is nil discernable fluorine in feed. For design purposes an amount of 0.0038% wt. at 1:10 ratio of chlorine will be added by Entech. Limit is ≈0.05% wt.

REV	DESCRIPTION	SIG	ISS	DATE
0	PREL DESIGN	PL	04/12	04/12

REFERENCE DRAWING | DRAWING NUMBER

ENTECH RENEWABLE ENERGY SOLUTIONS

DRAWN	DATE
PL	04/12
CHKD	DATE
NM	04/12
AUTH	DATE
NM	04/12
JOB No.	SCALE
	1 : XXX

3rd ANGLE PROJECTION

MATERIAL . | SPECIFICATION . | FINISH . | WEIGHT .

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TITLE PROPOSED ENTECH-WtGAS-RES (72 MWt) FOR EAST ROCKINGHAM PJ.
WDF - COMPOSITION & ULTIMATE ANALYSIS

DRAWING No. D120408-1 D120408-1 .dwg

SHEET 1 OF 1 SHEETS