

Table S1. Composition of pyrolysis tars determined by GC-MS (%area)

	Tar RH	Tar ZW	Tar PW
Acids	4.16	2.27	2.37
Acetic acid	3.99	1.57	1.59
Propanoic acid	0.17	0.25	0.25
4-Ethylbenzoic acid	0.00	0.45	0.53
Aldehydes	0.37	0.00	0.00
Succindialdehyde	0.37	0.00	0.00
Ketones	10.27	6.72	5.87
Hydroxyacetone	1.77	0.00	0.16
1-Hydroxy-2-butanone	0.43	0.00	0.00
Cyclopentanone	0.09	0.00	0.00
2-Cyclopenten-1-one	0.00	0.61	0.00
3-Methyl-2-hexanone	0.35	0.00	0.00
1-(Acetyloxy)-2-propanone	0.96	0.18	0.20
2-Methyl-2-cyclopenten-1-one	0.43	0.54	0.56
1,2-Cyclopentanedione	0.86	0.00	0.00
2,5-Hexanedione	0.17	0.00	0.00
3-Methyl-2-cyclopenten-1-one	0.82	1.05	1.18
3,4-Dimethyl-2-cyclopenten-1-one	0.20	0.11	0.10
3-Methyl-1,2-cyclopentanedione	1.89	0.91	0.89
2,3-Dimethyl-2-cyclopenten-1-one	0.38	0.55	0.65
Acetophenone	0.00	0.24	0.22
3-Ethyl-2-cyclopenten-1-one	0.00	0.49	0.45
3-Etil-2-hidroxi-2-ciclopenten-1-ona	0.50	0.21	0.14
2,3-Dihydro-1H-inden-1-one	0.40	0.68	0.73
9H-Fluoren-9-one	0.00	0.20	0.16
3,3-Dimethyl-2-butanone	0.34	0.00	0.00
2,3,4-Trimethyl-2-cyclopenten-1-one	0.00	0.09	0.00
4-(1-Methylethyl)-2-cyclohexen-1-one	0.28	0.00	0.00
1-(3,5-Dimethoxyphenyl)-ethanone	0.40	0.39	0.00
Spiro[2.4]heptan-4-one	0.00	0.47	0.43
Esters	1.32	0.52	0.58
Propanoic acid, ethenyl ester	0.00	0.13	0.11
Methyl acetate	0.34	0.00	0.00
Butanoic acid, 2-propenyl ester	0.49	0.00	0.00
Isopropyl hexanoate	0.26	0.39	0.47
3-[4-(Acetyloxy)-3-methoxyphenyl]- 2-propenoic acid, methyl ester	0.23	0.00	0.00
Ethers	1.19	5.83	5.27
1-Ethoxy-4-ethyl-benzene	0.00	0.41	0.56
1-Methoxy-2-(methoxymethyl)-benzene	0.00	0.34	0.26

1,2,3-Trimethoxybenzene	0.54	3.35	3.26
1,2,3-Trimethoxy-5-methylbenzene	0.65	1.73	1.19
Furans	11.41	2.85	3.38
2(5H)-Furanone	0.70	0.07	0.14
5-Methyl-2(5H)-furanone	0.21	0.00	0.00
5-Methyl-furfural	0.51	0.29	0.48
3-Methyl-2(5H)-furanone	0.35	0.30	0.32
3-Hydroxydihydro-2(3H)-furanone	0.22	0.00	0.00
2,3-Benzofuran	0.00	0.00	0.18
4-Methyl-2(5H)-furanone	0.22	0.16	0.23
2,3-Dimethyl-2(5H)-furanone	0.32	0.00	0.00
2-Methylbenzofuran	0.00	0.00	0.10
5-(Hydroxymethyl)dihydro-2(3H)-furanone	0.40	0.00	0.00
2,3-Dihydrobenzofuran	6.46	0.91	0.85
5-Hydroxymethylfurfural	0.85	0.00	0.00
Dibenzofuran	0.00	0.58	0.57
1-(2-Furanyl)-ethanone	0.67	0.54	0.51
3,5-Dimethyl-2(5H)-furanone	0.50	0.00	0.00
Pyrans	0.80	0.53	0.28
3-Hydroxy-2-methyl-4H-pyran-4-one	0.69	0.00	0.00
7-Hydroxy-2H-1-benzopyran-2-one	0.11	0.00	0.00
6,7-Dimethoxy-2H-1-benzopyran-2-one	0.00	0.53	0.28
Alcohols and sugars	5.03	2.60	4.68
3-Furanmethanol	1.45	0.33	0.39
Tetrahydro-2-furanmethanol	0.29	0.00	0.00
Cyclopropanemethanol	1.08	0.00	0.00
2-Methyl-1-pentanol	0.13	0.00	0.00
1H-Indenol	0.00	0.49	0.46
1,4:3,6-Dianhydro- α -D-glucopyranose	0.00	0.59	0.56
2,3-Anhydro-D-mannosan	0.46	0.00	0.32
1,6-Anhydro- β -D-glucopyranose	1.62	1.19	2.95
Phenols	52.57	60.67	60.66
Alkylated phenols	24.89	32.61	36.52
Phenol	4.15	4.59	5.30
2-Methylphenol	1.71	3.01	3.46
4-Methylphenol	4.24	5.95	6.56
2,6-Dimethylphenol	0.00	0.65	0.73
2-Ethylphenol	0.29	0.53	0.61
2,4-Dimethylphenol	0.75	1.67	2.28
2,5-Dimethylphenol	0.59	0.65	0.72
4-Ethylphenol	4.56	3.22	3.28
3,4-Dimethylphenol	0.00	0.37	0.40
3,5-Dimethylphenol	0.48	0.00	0.00
2,3-Dimethylphenol	0.12	0.34	0.37

1,2-Dihydroxybenzene	2.77	1.58	2.25
3-(1-Methylethyl)-phenol	0.00	0.56	0.69
2-Ethyl-5-methylphenol	0.53	1.20	1.26
3-Ethyl-5-methylphenol	0.00	0.00	0.31
3-Methyl-1,2-benzenediol	1.39	0.97	1.15
2,4,6-Trimethylphenol	0.00	0.00	0.43
2,3,5-Trimethylphenol	0.00	0.20	0.14
1,4-Benzenediol	0.85	0.35	0.29
4-Methyl-1,2-benzenediol	0.83	1.06	1.60
5-Methyl-2-(1-methylethyl)-phenol	0.00	0.38	0.00
2-Methyl-5-(1-methylethyl)-phenol	0.00	0.80	0.55
2-(2-Propenyl)-phenol	0.00	0.19	0.00
4-(2-Propenyl)-phenol	0.00	0.38	0.77
2-Methyl-1,4-benzenediol	0.98	0.32	0.00
4-Ethyl-1,2-benzenediol	0.40	1.39	1.56
1-(3-Hydroxyphenyl)-ethanone	0.00	0.42	0.29
2-Methyl-6-(2-propenyl)-phenol	0.00	0.62	0.63
3-Hydroxybiphenyl	0.00	0.26	0.18
4-Hydroxybiphenyl	0.00	0.39	0.28
Methyl (2E)-3-(4-Hydroxyphenyl)-prop-2-enoate	0.11	0.00	0.00
Methyl 3-(4-Hydroxyphenyl)-propionate	0.14	0.00	0.00
2-(1-Methylpropyl)-phenol	0.00	0.17	0.00
4-Propylresorcinol	0.00	0.39	0.00
4-Hexylresorcinol	0.00	0.00	0.43
Phenolic ethers	27.68	28.06	24.14
2-Methoxyphenol	4.27	2.76	3.16
2-Methoxy-5-methylphenol	0.19	0.19	0.23
2-Methoxy-4-methylphenol	3.82	2.84	4.11
2-Methoxy-1,4-benzenediol	0.53	0.46	0.00
4-Ethyl-2-methoxyphenol	3.29	1.66	1.94
2-Methoxy-4-vinylphenol	2.68	0.00	0.00
2,6-Dimethoxyphenol	2.20	5.55	3.85
2-Methoxy-4-(2-propenyl)-phenol	1.64	1.79	1.59
2-Methoxy-4-propylphenol	0.86	0.36	0.37
3-Hydroxy-4-methoxybenzaldehyde	1.24	0.90	0.70
cis-2-Methoxy-4-propenylphenol	0.73	0.78	0.74
trans-2-Methoxy-4-propenylphenol	2.58	2.00	2.26
1-(4-Hydroxy-3-methoxyphenyl)-ethanone	0.00	0.81	0.00
1-(4-Hydroxy-3-methoxyphenyl)-2-propanone	1.35	1.01	0.81
4-(4-Hydroxy-3-methoxyphenyl)-2-butanone	0.34	0.00	0.73
2,6-Dimethoxy-4-(2-propenyl)-phenol	0.78	4.03	1.71
4-Hydroxy-3,5-dimethoxybenzaldehyde	0.00	0.86	0.42
1-(4-Hydroxy-3,5-dimethoxyphenyl)-ethanone	0.44	0.78	0.52
4-Hydroxy-2-methoxycinnamaldehyde	0.40	0.00	0.00

1-(4-Hydroxy-3,5-dimethoxyphenyl)-1-propanone	0.00	0.24	0.28
1-(2,6-Dihydroxy-4-methoxyphenyl)-1-butanone	0.17	0.63	0.39
(E)-3,3'-Dimethoxy-4,4'-dihydroxystilbene	0.17	0.41	0.33
Hydrocarbons	0.12	8.31	8.84
p-xylene	0.12	0.00	0.00
Indene	0.00	0.23	0.41
cis-1,4-Dimethyl-2-methylenecyclohexane	0.00	0.22	0.00
2-Methyl-1H-indene	0.00	0.00	0.11
Naphthalene	0.00	0.49	1.10
1-Methylnaphthalene	0.00	0.00	0.44
2-Methylnaphthalene	0.00	0.36	0.80
Acenaphthylene	0.00	0.83	0.94
9H-Fluorene	0.00	0.51	0.37
Phenanthrene	0.00	1.97	2.06
1-Methylphenanthrene	0.00	0.28	0.18
9-Methylanthracene	0.00	0.38	0.32
4,5-Methylene-phenanthrene	0.00	0.56	0.00
2-Phenylnaphthalene	0.00	0.42	0.32
1,2-(1,8-naphthalene)benzene	0.00	0.63	0.54
Pyrene	0.00	1.00	0.77
Triphenylene	0.00	0.43	0.36
1,1a,6,6a-Tetrahydrocycloprop[a]indene	0.00	0.00	0.12
Others	1.94	0.00	0.76
1,3-Dimethylpyrazole	1.73	0.00	0.76
1H-Pyrrole-2-carboxaldehyde	0.12	0.00	0.00
2-[(Methylamino)methyl]cyclohexanol	0.09	0.00	0.00
Unknown	10.82	9.70	7.31