



Lignin Determination

Klason lignin--1

- Extractive-free biomass sample ground to 40 mesh
- Measure moisture content
- 0.175 oven dried grams weighed in digestion tubes (50 ml tubes from SCP science)

Klason lignin--2

- Add 1.5 ml 72% Sulfuric acid and stir with glass rod
- Placed in water bath at 30 °C for 1 hour (stirred few times)
- Add 42 ml DI water (3% sulfuric acid) and place in autoclave set at 121 °C for 1 hour
- Take out and cool in ice/water bath
- Filter with porcelain crucibles fitted with glass fiber G8 filters
- Filter preparation
 - Washed and dried in 105 °C oven

Klason Lignin--3

- Solid = Klason lignin
- Liquid=
 - Acid soluble lignin
 - Measured using UV-spectrophotometer at 205 nm
 - Sugars
 - Quantified using HPLC

Results from Biomass Samples

Sample ID	Name	sample wt.	%dm	o.d. weight	Crucible + filter	Crucible + filter+Sample	%K.Lignin
1a	Switchgrass	0.1967	89.42	0.176	16.5873	16.6354	27.35
1b	Switchgrass	0.1956	89.42	0.175	16.5215	16.5691	27.21
2a	Southern Pine	0.1957	91.3	0.179	15.6094	15.6727	35.43
2b	Southern Pine	0.1893	91.3	0.173	16.6611	16.7251	37.03
3a	1 Switchgrass	0.1875	92.38	0.173	16.7169	16.7654	28.00
3b	1* Switchgrass	0.1881	92.38	0.174	16.7869	16.8349	27.62
4a	Cardboard	0.1815	92.38	0.168	15.6522	15.6921	23.80
4b	Cardboard	0.1845	92.38	0.170	16.3037	16.3546	29.86
5a	Southern Pine 2	0.185	93.46	0.173	8.7556	8.8125	32.91
5b	Southern Pine 2*	0.1865	93.46	0.174	8.8867	8.9448	33.33