

Materials List for:

Fast Pyrolysis of Biomass Residues in a Twin-screw Mixing Reactor

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Materials

Name	Company	Catalog Number	Comments
Wheat straw	Dörmann Kraichtal-Münzesheim	n/a	<i>Triticum aestivum</i> L.
Scrap wood	Rettenmeier Holding AG	n/a	According to class A2 of the German scrap wood decree (AltholzV §2): glued, coated, painted, or otherwise treated scrap wood without organic halogen compounds and wood preservatives
Miscanthus	Hotel-Heizungsbau Kraichgau-Odenwald	n/a	<i>Miscanthus x giganteus</i>
Ethylene glycol	Häffner GmbH & Co KG	1042090220600	
Ethanol	Häffner GmbH & Co KG	1026800150600	Grade 99.9%
Nitrogen	KIT	n/a	Supplied by internal nitrogen pressure system.
Pyrolysis test rig	self-built	n/a	Flow scheme is illustrated in manuscript.
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Analyses:			
Gas chromatograph Daniel 700	Emerson Process Management	n/a	Designed for this specific application by Emerson; two 20% SF 96 columns, two HAYESEP N columns, and one MS-5A washed column; carrier gas is helium
Helium	Air Liquide	P0252L50R2A001	Grade 6.0
Gas mixture for calibration	basi Schöberl GmbH & Co. KG	FG 10002	Specified gas composition: 5% Ne, 2% O ₂ , 20% CO, 30% CO ₂ , 5% CH ₄ , 5% H ₂ , 2% C ₂ H ₆ , 0.5% C ₃ H ₈ , 0.5% C ₄ H ₁₀ , 0.5% C ₅ H ₁₂ , remainder N ₂ .
Neon	Air Liquide	P0890S10R2A001	Grade 4.0; used as fixed reference gas flow; not necessarily required and is only given as an example for quantifying the pyrolysis gas flow.
Elementaranalysator CHN628	Leco Instrumente GmbH	622-000-000	
TGA701	Leco Instrumente GmbH	n/a	
DIMATOC 2000	Dimatec	n/a	
Hydranal methanol dry	Sigma Aldrich	34741	
Hydranal composite V	Sigma Aldrich	34805	
841 Titrande	Deutsche Metrohm GmbH & Co. KG	2.841.0010	
774 Oven Sample Processor	Deutsche Metrohm GmbH & Co. KG	2.774.0010	

800 Dosino	Deutsche Metrohm GmbH & Co. KG	2.800.0010	
801 Stirrer	Deutsche Metrohm GmbH & Co. KG	2.801.0010	
Methanol	Carl Roth GmbH & Co KG	83884	99% for synthesis
Whatman cellulose filter grade 42	Sigma Aldrich	WHA1442090	
Methanol-D ₄	Sigma Aldrich	151947	
3-(Trimethylsilyl)propionic-2,2,3,3-d ₄ acid sodium salt	Sigma Aldrich	269913	
BZH 250 MHz	Bruker	n/a	