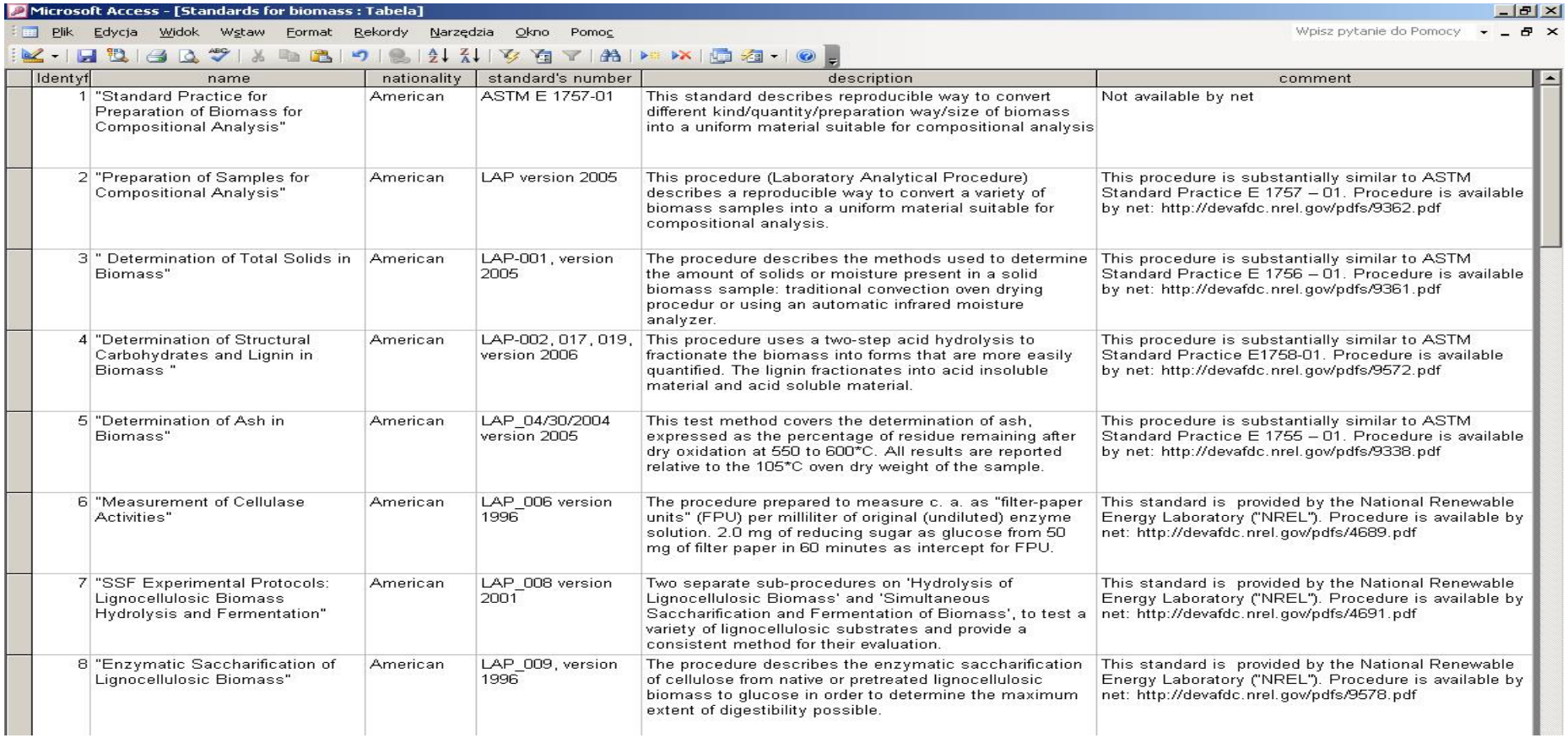
List of collected and reviewed existing standardized methods
PHYDADES Deliverable 3

A list of existing standard methods was compiled. These methods are relevant for the data that will be collected in the BIODAT database. The list is a separate database, designed as an Access-file to enable different kinds of data presentation: as a form, as a report, as a table, etc.

In the base, each standard is presented by using following features: title, nationality, number and description. There is a place also for comments. A print-out of the database is provided below:


Microsoft Access - [Standards for biomass : Tabela]

Plik Edycja Widok Wstaw Format Rekordy Narzędzia Okno Pomoc — Wpisz pytanie do Pomocy

Identyf	name	nationality	standard's number	description	comment
1	"Standard Practice for Preparation of Biomass for Compositional Analysis"	American	ASTM E 1757-01	This standard describes reproducible way to convert different kind/quantity/preparation way/size of biomass into a uniform material suitable for compositional analysis	Not available by net
2	"Preparation of Samples for Compositional Analysis"	American	LAP version 2005	This procedure (Laboratory Analytical Procedure) describes a reproducible way to convert a variety of biomass samples into a uniform material suitable for compositional analysis.	This procedure is substantially similar to ASTM Standard Practice E 1757 – 01. Procedure is available by net: http://devafdc.nrel.gov/pdfs/9362.pdf
3	" Determination of Total Solids in Biomass"	American	LAP-001, version 2005	The procedure describes the methods used to determine the amount of solids or moisture present in a solid biomass sample: traditional convection oven drying procedur or using an automatic infrared moisture analyzer.	This procedure is substantially similar to ASTM Standard Practice E 1756 – 01. Procedure is available by net: http://devafdc.nrel.gov/pdfs/9361.pdf
4	"Determination of Structural Carbohydrates and Lignin in Biomass "	American	LAP-002, 017, 019, version 2006	This procedure uses a two-step acid hydrolysis to fractionate the biomass into forms that are more easily quantified. The lignin fractionates into acid insoluble material and acid soluble material.	This procedure is substantially similar to ASTM Standard Practice E1758-01. Procedure is available by net: http://devafdc.nrel.gov/pdfs/9572.pdf
5	"Determination of Ash in Biomass"	American	LAP_04/30/2004 version 2005	This test method covers the determination of ash, expressed as the percentage of residue remaining after dry oxidation at 550 to 600*C. All results are reported relative to the 105*C oven dry weight of the sample.	This procedure is substantially similar to ASTM Standard Practice E 1755 – 01. Procedure is available by net: http://devafdc.nrel.gov/pdfs/9338.pdf
6	"Measurement of Cellulase Activities"	American	LAP_006 version 1996	The procedure prepared to measure c. a. as "filter-paper units" (FPU) per milliliter of original (undiluted) enzyme solution. 2.0 mg of reducing sugar as glucose from 50 mg of filter paper in 60 minutes as intercept for FPU.	This standard is provided by the National Renewable Energy Laboratory ("NREL"). Procedure is available by net: http://devafdc.nrel.gov/pdfs/4689.pdf
7	"SSF Experimental Protocols: Lignocellulosic Biomass Hydrolysis and Fermentation"	American	LAP_008 version 2001	Two separate sub-procedures on 'Hydrolysis of Lignocellulosic Biomass' and 'Simultaneous Saccharification and Fermentation of Biomass', to test a variety of lignocellulosic substrates and provide a consistent method for their evaluation.	This standard is provided by the National Renewable Energy Laboratory ("NREL"). Procedure is available by net: http://devafdc.nrel.gov/pdfs/4691.pdf
8	"Enzymatic Saccharification of Lignocellulosic Biomass"	American	LAP_009, version 1996	The procedure describes the enzymatic saccharification of cellulose from native or pretreated lignocellulosic biomass to glucose in order to determine the maximum extent of digestibility possible.	This standard is provided by the National Renewable Energy Laboratory ("NREL"). Procedure is available by net: http://devafdc.nrel.gov/pdfs/9578.pdf

9	"Determination of Extractives in Biomass"	American	LAP_010, version 4/15/05 version	This procedure uses a two-step extraction process to remove water soluble and ethanol soluble material.	Regarding LAP-010 or ASTM Standard Test Method E 1690 "Determination of Ethanol Extractives in Biomass". Procedure is available by net: http://devafdc.nrel.gov/pdfs/9345.pdf
10	"Determination of Ethanol Concentration in Biomass to Ethanol Fermentation Supernatants by Gas Chromatography"	American	LAP_011, version 1994	This procedure details a method to prepare biomass to ethanol fermentation supernatants for analysis and quantify their ethanol concentration (from 1 to 50 g/L). This packed column GC method utilizes isopropanol to determine concentration of ethanol.	This procedure describes an associated QA/QC program to demonstrate that the results comply with the Ethanol Project Quality Assurance Plan. Procedure is available by net: http://devafdc.nrel.gov/pdfs/4694.pdf
11	"Standard Test Method for Moisture, Total Solids, and Total Dissolved Solids in Biomass Slurry and Liquid Process Samples"	American	LAP_012, version 1994	This test method covers the determination of total solids (or moisture) in slurries or the liquid fraction of samples generated during the pretreatment, fractionation, and fermentation of biomass.	This standard is provided by the National Renewable Energy Laboratory ("NREL"). Procedure is available by net: http://devafdc.nrel.gov/pdfs/4695.pdf
12	"Determination of Sugars, Byproducts, and Degradation Products in Liquid Fraction Process Samples"	American	LAP_8/96 and 4/30/04, version 2005	This procedure is used to characterize liquid process samples, including pretreatment liquors, liquid fermentation samples, and liquid fractions of process solids, appropriate for biomass containing the components listed throughout the procedure.	This standard is provided by the National Renewable Energy Laboratory ("NREL"). Procedure is available by net: http://devafdc.nrel.gov/pdfs/9462.pdf
13	"Determination of Starch in Biomass Samples by High-Pressure Liquid Chromatography "	American	LAP_016, version 2005	This procedure is used to measure the starch content in solid biomass samples, appropriate for solid biomass samples containing starch, usage recommended in conjunction with other procedures, to determine the chemical composition of biomass samples	This standard is provided by the National Renewable Energy Laboratory ("NREL"). Procedure is available by net:http://devafdc.nrel.gov/pdfs/9360.pdf
14	"Determination of Insoluble Solids of Pretreated Biomass Material"	American	LAP_018, version 1998	This procedure is intended to determine the percentage of water insoluble solids in a pretreated biomass sample after all soluble components have been extracted with aggressive water washing.	This standard is provided by the National Renewable Energy Laboratory ("NREL"). Procedure is available by net: http://devafdc.nrel.gov/pdfs/4701.pdf
15	"Determination of Protein Content in Biomass"	American	LAP, version 2005	This procedure is appropriate for most types of biomass, including extractives-free biomass and biomass before extraction; suitable for biomass feedstocks, process solids and liquids.	This standard is provided by the National Renewable Energy Laboratory ("NREL"). Procedure is available by net: http://devafdc.nrel.gov/pdfs/9347.pdf
16	"Standard Test Method of Moisture Analysis of Particulate Wood Fuels"	American	ASTM E 871	This method covers the determination of total weight basis moisture in particulate wood fuel, e.g. sanderdust, sawdust, pellets, green tree chips, hogged fuel, or other type particulate wood fuel having a maximum particle volume of 16.39 cm3 (1 in.3).	Not available by net

17	"Standard Test Method for Ash in Biomass"	American	ASTM E 1755-1	This method covers ash determination, as the mass percent of residue remaining after dry oxidation (at 575±25ºC), of hard and soft woods, herbaceous and agricultural residues, ... Results reported relative to the 105 ºC oven-dried mass of the sample.	Not available by net
18	"Compressed wood or compressed bark in natural state – Pellets and briquettes – Requirements and test specifications"	Austrian	ÖNORM M 7135		Not available by net
19	"Compressed wood in natural stage – Woodpellets – Quality assurance in the field of logistics of transport and storage	Austrian	ÖNORM M 7136		Not available by net
20	"Standard Test Method for Bulk Density of Densified Particulate Biomass Fuels"	American	ASTM E 873 (1982)	This method covers the procedure for the determination of bulk density of densified particulate biomass fuels with a maximum particle volume of 16.39 cm3 (1 in.3).	Not available by net
21	"Testing of solid fuels. Compressed untreated wood. Requirements and testing"	German	DIN 51731 (1996)	This standard lays down the requirements for compressed, untreated wood, including its testing. The compressed wood is designated for use in furnaces. This standard contains specifications, indicated by dated or undated references.	Not available by net
22	"Quality assurance manuals for solid wood fuels"	Finnish		Guidelines for sampling and determination of properties of wood and peat	Not available by net
23	"Biofuels and peat - Fuel Pellets - Classification"	Swedish	SS 18 71 20 (1998)	This standard describes three classes of fuel pellets. This differ primarily in size and ash content.	Not available by net
24	"Biofuels and peat - Fuel Pellets - Classification"	Swedish	SS 18 71 21 (1998)	This standard describes two classes of wood fuel briquettes: one group for private consumers and the other for use in large plants with automatic fed. A third group based on raw materials other than wood fuel and for any end-user is also described.	Not available by net
25	"Firewood for domestic use"	OTHER	NS 4414 (1997)	Norwegian standard	Not available by net

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Picture 1. The table for data loading

The form of the user interface of the database is given below: