

**DDBST**DORTMUND DATA BANK
SOFTWARE & SEPARATION
TECHNOLOGYDDBST - Dortmund Data Bank Software & Separation Technology GmbH
Marie-Curie-Str. 10 | D-26129 Oldenburg | Germany

DDB 2016 Biodiesel Package

Data Bank Subset for Biodiesel Related Compounds (DDB Biodiesel)

Yearly 170 Gt of biomass is produced by photosynthesis worldwide. Biomass means mainly fat and oil (predominantly triglycerides), carbohydrates (sugar, starch, cellulose, chitin) and lignin. Today only 3 % of the biomass is used as food, fuel or as construction material, e.g. for furniture, etc.

In particular because of the shortage of oil and gas and the problems caused by CO₂ it seems obvious to use these natural resources as raw material in chemical industry or as energy source.

So for example in chemical industry fat and oil are converted to fatty acids by hydrolysis or fatty acid esters (biodiesel), e.g. FAME manufactured by transesterification. Fatty alcohols can be produced by hydrogenation of fatty acids. For the development of the most economical production process, a reliable knowledge of the thermophysical pure component and mixture properties of the compounds involved is required. These are the different glycerides (tri-, di-, mono glycerides), glycerol, fatty acids, fatty acid alkyl esters, fatty alcohols, the different alcohols used for the transesterification reaction (methanol, ethanol, propanol, butanol, ..).

A great part of the required data are stored in the Dortmund Data Bank (DDB). A detailed description of the Biodiesel Package can be downloaded from www.ddbst.com – Products – Special Applications – Biodiesel Related Data). Besides for biodiesel production and processing, these data are of great value also for other applications like e.g. natural oil extraction and purification.

The biodiesel data bank is available for internal company-wide use within your company for a price of 16,800 € in form of ASCII files (site license) (PC-version 8,400 €).

The amount of biodiesel related data stored in the DDB are given in the table¹.

Data bank	Sets	Points
Vapor-liquid equilibria	2,400	23,200
Azeotropic data	1,500	1,500
Gas solubilities	500	1,900
Liquid-liquid equilibria	1,500	13,500
Solid-liquid equilibria	2,800	21,000
Activity coefficients at infinite dilution	2,600	2,600
Excess enthalpies	670	10,600
Excess heat capacities	140	1,170
Mixture densities	1,750	22,000
Mixture viscosities	1,140	13,300
Electrical conductivities	85	630
Octanol-Water partition coefficients	120	120
Salt solubilities	170	1,070
Further mixture properties	1,130	12,000
Pure component properties	8,860	36,700
Different thermodynamic properties	1,460	12,450
Total	26,825	173,740

For the efficient use of these data we would recommend the software package DDBSP. The software package allows retrieving the data using several search options (components, systems, literature), has graphical data representations, has copy and print capabilities, and allows data export to PPDx and Aspen INP files. DDB-Biodiesel including basic parts of DDBSP is available for 9,500 € as an indefinite single PC version. Furthermore with the help of the software package the user can define new components or store own experimental data. At the same time with the software package the required basic data for the compound used, such as name, formula, CAS registry number, Antoine constants, critical data, acentric factor, density, van der Waals properties, melting point and heat of fusion, dipole moment etc. are delivered.

¹ These data set and data point numbers are only a snap-shot representing the status of May 2016. These numbers are constantly changing resp. increasing.