

DATA BULLETIN

High-precision oxygen analysis in biomass with the rapid OXY cube

Oxygen concentration analysis is gaining importance in the fuel and biomass industry. Only direct analytical determination of oxygen concentration can deliver accurate, unbiased data. In contrast, oxygen concentrations derived from indirect calculation by difference (e.g., according to ASTM D3176) suffers from cumulative errors associated with the measurement of C, H, N and S and the determination of ash content. In the fuel industry, regulations (cf., ASTM D5622), as well as current market demands, require more and more precise direct analytical determination of oxygen concentrations.

Various biomass samples were weighed into tin boats (or capsules in case of liquids) and analyzed six times at a pyrolysis temperature of 1450°C. The average O concentrations and absolute standard deviations are given below.

SAMPLE	O [%]	SD [%]	SAMPLE	O [%]	SD [%]
pistachio shell	44.80	0.07	olive pits	38.46	0.28
walnut shell	42.73	0.22	wood charcoal	10.79	0.09
birch wood	43.97	0.11	sunflower oil	10.47	0.03
wood pellets	42.80	0.11	rapeseed oil	10.40	0.03
wood pellets ash	14.69	0.31			

Through novel gas handling technology, rapid OXY cube offers highly precise, blank-free and matrix-independent oxygen concentration analysis with unprecedented precision and convenience.

The rapid OXY cube is fully compliant with ASTM D5622 ("Standard Test Methods for Determination of Total Oxygen in Gasoline and Methanol Fuels by Reductive Pyrolysis"), the most important standard for oxygen concentration analysis of liquid biofuels.

INSTRUMENT:

rapid OXY cube

DETAILS:

mode: 0

sample: 50 – 100 mg biomass



STANDARD:

ASTM D5622

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