

Carbon-Nitrogen Dumas analyser

<https://labfacilities.wur.nl/SearchDetail.aspx?deviceid=5822f3d9-020e-4f8a-a65f-aa3b6c98c11c>

Brand

LECO Instrumente GmbH

Type

LECO CN628C



Contact

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Organisation

Animal Sciences Group

Department

Animal Nutrition

Description

The Dumas principle is an analytical chemistry method to determine the carbon and nitrogen content in samples. The method is based on the combusting of a sample at 1000°C in the presence of oxygen, whereby the carbon and nitrogen are converted to CO₂ and NO_x respectively. Both gasses are separated by chromatography and measured in a thermal conductivity cell. To calculate the crude protein content of samples (multiplying N with 6.25) the Dumas method can be used as an alternative for the Kjeldahl method.

Technical Details

The total analysis time after preparation and calibration of the equipment is approximately 10 minutes per sample. The Dumas method is relatively easy to perform. The sample preparation is limited to the weighing of the material in a cup. In contrast to the Kjeldahl method, the Dumas method is faster and does not require hazard chemicals. The Dumas method has a high accuracy and precision and is calibrated regularly.

Applications

The method can be used for solid samples, such as feedstuffs, diets, intestinal content, manure and soil and for liquids such as urine.

Complementary Techniques

This technique is a stand-alone determination. The Dumas analysis can be combined with the estimation of the stable isotope ration in Carbon and Nitrogen. For this analysis the laboratory has a special EA-IRMS equipment.