

## COFFEE GROUNDS AS A REACTIVE IN BIOGAS PLANTS

### characteristics

A **COFFEE GROUNDS** is a product obtained during the production of soluble coffee in the phase of the liquid extraction of the coffee through pressure and temperature. It is, therefore, a 100% vegetal product from coffee seeds.

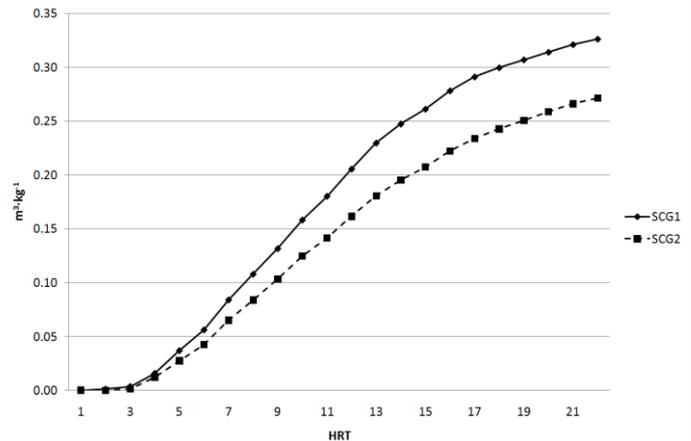
**COFFEE GROUNDS** is a material served in bulk, grounded so that a fine granulometry, yet not dusty, product is obtained. This facilitates its transport and usage, even through pneumatic systems. Concerning the storage, it's a dry-looking material that can be stored outdoors.

Our business guarantees the possibility of serving large quantities, with previous programming.

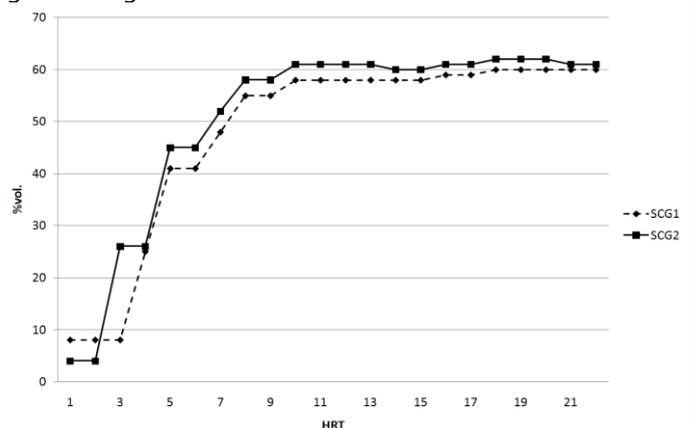
Chemical composition of spent coffee grounds samples:

PARAMETER	UNIT	VALUE
DRY MATTER	%	42,55
DRY ORGANIC MATTER	%	98,59
ASHES	%	1,45
TOTAL FIBRES	%	20,13
ACID DETERGENT FIBRE (ADF)	%	43,05
NEUTRAL DETERGENT FIBRE (NDF)	%	57,70
ACID DETERGENT LIGNIN (ADL)	%	14,99
CRUDE PROTEIN	%	13,46
CRUDE FAT	%	13,56
CRUDE STARCH	%	33,19
TOTAL ORGANIC CARBON (TOC)	%	2,03
NITROGEN	[-]	17:01

Regarding the production of biogas, based on a study carried out by the Department of Agriculture, Food and Environmental Engineering, Faculty of AgriSciences, Mendel University in Brno (Czech Republic), on the biogas production capacity of the coffee, the following values were obtained:



1: Cumulative methane yield during the spent coffee ground digestion



2. Methane concentration in biogas

Specific methane yield and methane content in biogas generated after 22 day hydraulic retention time are shown in figure 1 and 2, respectively.

When studying spent coffee grounds biogas production, biogas yields ranged from 0.500 – 0.598 m<sup>3</sup>/kg dry organic matter with methane concentration in biogas 55 – 61 %. Biogas production declined steadily over the test period. Even that spent coffee grounds contain materials caffeine, tannins, and polyphenols which can be toxic for fermented environment no inhibition was observed during tests.

### terms of service

- Walking floor trucks will be used for the transport, of up to 24 tons. It's also possible maritime transport.
- **BURÉS PROFESIONAL, S.A.** has a safety stock to maintain the service in case of accidents or technical stops of the driver.