

GAS CONTENT MEASUREMENT IN COALS BY DIRECT MEASUREMENT



The direct measurement of gas content in coals is one of the most basic and important measurements in determining a coal seam gas resource. Sigra uses three techniques to directly measure the gas content of coals – Core Desorption, Chip Desorption, and Gas Content Without Coring.

Chip Desorption

Sigra is able to determine gas content from coal cuttings delivered by air drilling. This is made viable in terms of gas loss by the high speed with which the cuttings may be brought to surface. The cuttings are collected and placed in a canister where desorption is automatically monitored and sampled for gas type analysis. The desorption occurs at a much faster rate than would be the case for core because of the small particle sizes.

Once desorption has slowed sufficiently (typically 2 hours), the canister and cuttings are weighed to determine the mass of the sample. The canister is then opened and the cuttings sub-sampled and weighed. The sub-samples are placed in a sealed vessel and crushed to release residual gas which is then measured. The crushed sample is retained for use in the measurement of the sorption isotherm with the ash content being determined by proximate analysis.

The particle size distribution of the remaining sample is now determined. Sigra fit a numerical model of diffusion from the measured particle sizes to match the calculated desorption behaviour which includes the residual gas measurement. This is used to provide an estimate of the both lost gas prior to the cuttings being sampled, and the mean diffusion coefficient. The total gas content is determined from the estimate of lost gas and the measured gas released, providing a very accurate estimate of the gas content of coals.

Example of Cuttings Desorption – Real Data and Model Fit

Modelled Gas Desorption Vs. Recorded Gas Desorption

