

ACIRS-S2D-2016

Sulfur Reference Material

PRODUCT INFORMATION LEAFLET

Sulfur Reference Material with selected trace elements intended to be used for quality control purposes. Total Sulfur is traceable to SI units and is suitable for calibration purposes.

Higher rank bituminous coal, 125 g at a nominal top size of -212 μ m

Table 1 Assigned Property Values

	Property Value ¹	Standard Deviation ²	Expanded Uncertainty ³	Number of laboratories
Ash, % d	18.02	0.081	0.042	23
Total Sulfur, % d	2.877	0.0815	0.0205	99
Chlorine, % d	0.010	0.0014	0.0005	41
Mercury, mg/kg d	0.281	0.0184	0.0077	36

This sample **must** be thoroughly mixed by end-over-end rotation each time before sub-sampling. To minimise the risk of compositional changes due to oxidation, store in a cool, dark place in original containers with the lid tightly sealed.

The full technical report and Safety Data Sheet for this product are available at www.acirs.com.au/products/acirs-sulfur-reference-materials/

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ADDITIONAL INFORMATION

ACIRS-S2D-2016 was tested in the Q1, 2015 CANSPEX proficiency testing program. The values in Table 2 are provided from the proficiency testing report for informational purposes only to allow the user to better understand the characteristics of this sample. Oxidation sensitive parameters are subject to change due to the normal oxidation processes for coals and will not be monitored.

Table 2 Informational Data⁵

Parameter	Indicative Value	Parameter	Indicative Value
Volatile Matter, % d	35.5	Phosphorus, % d	0.004
Gross Calorific Value, MJ/kg d	28.02	Fluorine, mg/kg d	80
Total Carbon, % d	66.6	Selenium, mg/kg d	1.6
Hydrogen, % d	4.81	Pyritic Sulfur, % d	0.57
Nitrogen, % d	1.21	Sulfate Sulfur, % d	0.65

NOTES

1 Property values are the best estimate of the true value for the measurand and are based on the robust mean of participant results from a CANSPEX proficiency testing program conducted (excluding results which did not meet ACIRS precision criteria). Ash was analysed by ISO 1171 and equivalent test methods. S, Cl and Hg were analysed by multiple test methods. Biases between methods were not observed. Results from in-house methods were included when within the normal distribution of standard national and international test methods.

2 Standard deviation is a robust value used to derive the likely range of results. The value for a measurand from a randomly chosen laboratory would be expected to lie within 2 standard deviations of the assigned property values with 95% probability.

3 Expanded uncertainty provides the user with information on the likely range of the true (but unknown) value for each parameter and has been estimated in accordance with the Guide to the Expression of Uncertainty in Measurement (GUM) and ISO 13528 with a coverage factor $k=2$, corresponding to a level of confidence of about 95%⁴

4 The stability of assigned property values given in Table 1 will be monitored by ACIRS. It is the responsibility of the user to obtain the most recent Technical Report and Product Information Leaflet for this reference material.

5 Informational data / Indicative values are provided for information purposes only.

DISCLAIMER

To the extent permitted by law, ACIRS disclaims all warranties whether expressed or implied with regard to merchantability, non-infringement, or fitness for a particular purpose. In no event will ACIRS be liable for incidental damage or consequential loss arising from the use of this product.

Where the product does not conform to assigned property values, giving due consideration to the stated uncertainties and accepted tolerances, the total liability of ACIRS shall be limited at ACIRS' absolute discretion to either replacement of the product or refund of the purchase price.

Revision History

Document Number	Summary	Date
ACIRS-S2D-PIL-01	Original (rev0)	08/08/2016
ACIRS-S2D-PIL-02	Minor editorial changes	27/03/2017
ACIRS-S2D-PIL-03	Addition of certified value for ash, editorial changes	15/02/2018