ACARP

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FINAL REPORT

Outbursting Scoping Study

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9.2.6 Gas Emission V-Index

The V-index is a measure of the volume of gas in the early stages of desorption of a coal sample under atmospheric pressure. The method is based upon early work of Ettinger and the equipment developed by Somnier (France) uses a flexible 0.5 mm diameter coiled round a drum. The V-Index is calculated using the following relationship

$$V = V_1 \cdot \left(\frac{t_2 - t_0}{t_2 - 2t_0} \bullet \frac{t_2}{t_0} \right) \text{ cm}^3/\text{g} \qquad (9.9)$$

where t_0 = Time required to collect the sample and seal it in a container, between 0 - 35 s.

V_1 = Volume of gas evolved at atmospheric pressure between elapse of next 35 - 70 s.

t_2 = Time required such that the amount of gas (V_2) evolved is twice that of V_1.

Somnier (1960) used 0.5 - 0.8 mm fractions and sample weight was 5.0 g.

In Dauphin basin, the critical value of $V \geq 4$ cm^3/g and in Cevennes basin $V \geq 3.5$ cm^3/g.

There are other variations of the V-index Some of these are given below:

9.2.7 Hargrave's Emission Rates

Hargraves (1962) developed equipment which measures gas emitted from the samples with virtually no back pressure (±25 mm of H_2O). A sample of approximately 4 g (±8%) in the size range of -14 mesh +25 mesh (-0.125 mm +0.5 mm) is collected in a container within 2 minutes and desorption is measured over time up to 6 minutes from the start of drilling (4 minutes in the sampling equipment). The sample is collected by drilling a 2 m hole in the corner of the development heading at 45° to the axis of development in the last 0.5 m of the hole length. For pure methane in the Gemini seam at Leichhardt Colliery, a critical value of 1.5 cc/g was postulated safe. This was reduced to 1.2 cc/g was at a later date. In the Bulli seam in CO_2 areas at Metropolitan Colliery, a value of 1.2 cc/g was accepted as critical.

Emission values are sensitive to the coal ply and highly sensitive to moisture content in the sample.