

Accepted Manuscript

TOC calculation of organic matter rich sediments using rock-Eval pyrolysis:
Critical consideration and insights

Bodhisatwa Hazra, Suryendu Dutta, Sumit Kumar

PII: S0166-5162(16)30414-1
DOI: doi: [10.1016/j.coal.2016.11.012](https://doi.org/10.1016/j.coal.2016.11.012)
Reference: COGEL 2754

To appear in: *International Journal of Coal Geology*

Received date: 2 August 2016
Revised date: 16 November 2016
Accepted date: 18 November 2016



Please cite this article as: Hazra, Bodhisatwa, Dutta, Suryendu, Kumar, Sumit, TOC calculation of organic matter rich sediments using rock-Eval pyrolysis: Critical consideration and insights, *International Journal of Coal Geology* (2016), doi: [10.1016/j.coal.2016.11.012](https://doi.org/10.1016/j.coal.2016.11.012)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

TOC calculation of organic matter rich sediments using Rock-Eval pyrolysis: critical consideration and insights

Bodhisatwa Hazra, Suryendu Dutta^{*}, Sumit Kumar

Department of Earth Sciences, IIT Bombay, Powai, Mumbai-400076, India

Email: s.dutta@iitb.ac.in

Abstract

The Total Organic Carbon (TOC) is one of the most important Rock-Eval pyrolysis derived parameters. The present study documents the suppression and underestimation of Rock-Eval TOC as a function of sample amount being used for analysis. For the purpose of study, a manually isolated vitrain band, carbonaceous shale and two shales were analyzed at different weights using a Rock-Eval. For the vitrain band and the carbonaceous shale samples, a drop in TOC content was observed with increasing sample amount. In each of the case (vitrain and carbonaceous shale), although the S2 pyrograms were fairly similar at successive higher weight fractions, it was observed that increasing portions of the CO₂ released during Rock-Eval oxidation and represented by S4 oxidation graphics, was undercounted with increasing sample charge, thereby underestimating the residual carbon (RC) and TOC content. The results indicate that at lower sample weights the entire organic matter is oxidized below 650 °C (S4-S5 boundary). However, at higher weights the organic matter is oxidized through a wider temperature range (beyond 650 °C) and consequently resulting in release of CO₂ through a wider temperature range. The insights developed in the paper indicate that sample amount should be around 5-10 mg and 30 mg for type III-IV organic matter-bearing coals and carbonaceous shales respectively. However, when the grain size was kept finer (<63 micron), it was observed that sample amounts can be kept around 15 mg for type III-IV

Download English Version:

<https://daneshyari.com/en/article/5483785>

Download Persian Version:

<https://daneshyari.com/article/5483785>

[Daneshyari.com](https://daneshyari.com)