

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549**

FORM S-8

**REGISTRATION STATEMENT UNDER
THE SECURITIES ACT OF 1933**



(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction
of incorporation or organization)

43-0921172
(I.R.S. Employer
Identification Number)

**One CityPlace Drive, Suite 300
St. Louis, Missouri 63141
(314) 994-2700**

(Address, including zip code, and telephone number, including area code
of registrant's principal executive offices)

Arch Coal, Inc. and Subsidiaries Employee Thrift Plan
(Full title of the plan)

Robert G. Jones
Senior Vice President – Law, General Counsel and Secretary
Arch Coal, Inc.
One CityPlace Drive, Suite 300
St. Louis, Missouri 63141
(314) 994-2700

(Name, address, including zip code, and telephone
number, including area code, of agent for service)

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer Accelerated filer Non-accelerated filer Smaller reporting company
(Do not check if a smaller reporting company)

Calculation of Registration Fee

Title of securities to be registered	Amount to be registered	Proposed maximum offering price per share (1)	Proposed maximum aggregate offering price (1)	Amount of registration fee (1)
Common stock, par value \$0.01 per share	1,000,000 shares (2)	\$16.14	\$16,140,000	\$634.30

- (1) Pursuant to Rule 457, these prices are estimated solely for the purpose of calculating the registration fee and are based upon the average of the high and low sales prices of the registrant's common stock on the New York Stock Exchange on December 31, 2008.
- (2) In addition, pursuant to Rule 416(c) under the Securities Act of 1933, this registration statement also covers an indeterminate amount of interests to be offered or sold pursuant to the employee benefit plan described herein.

This registration statement shall become effective immediately upon filing with the Securities and Exchange Commission in accordance with Section 8(a) of the Securities Act of 1933 and Rule 462 thereunder.

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Part II
Information Required in the Registration Statement

Pursuant to Instruction E of Form S-8, this filing relates to the registration of additional securities of the same class as other securities for which a registration statement filed on this form relating to a benefit plan is effective. The contents of the registration statement on Form S-8 (File No. 333-32777) filed on August 4, 1997 are hereby incorporated by reference, except as amended by the items included below.

Item 5. Interests of Named Experts and Counsel.

Gregory A. Billhartz, Assistant General Counsel and Assistant Secretary of Arch Coal, Inc., has rendered an opinion as to the validity of the shares of common stock being registered hereby. Mr. Billhartz is paid a salary by us and is a participant in various employee benefit plans offered to our employees generally.

Item 8. Exhibits.

The following exhibits are filed as part of this registration statement:

Exhibit	Description
4.1	Restated Certificate of Incorporation of Arch Coal, Inc. (incorporated by reference to Exhibit 3.1 to the registrant's Current Report on Form 8-K filed on May 5, 2006).
4.2	Arch Coal, Inc. Amended and Restated Bylaws (effective as of December 5, 2008) (incorporated by reference to Exhibit 3.1 to the registrant's Current Report on Form 8-K filed on December 10, 2008).
4.3	Form of Rights Agreement, dated March 3, 2000 (incorporated by reference to Exhibit 1 to the registrant's Current Report on Form 8-A filed on March 9, 2000).
5.1	Opinion of counsel.
23.1	Consent of independent registered public accounting firm.
23.2	Consent of counsel (included in Exhibit 5.1).
24.1	Power of attorney.

Item 9. Undertakings.

(a) The undersigned registrant hereby undertakes:

(1) to file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) to include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;

(ii) to reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and

(iii) to include any material information with respect to the plan of distribution not previously disclosed in this registration statement or any material change to such information in this registration statement;

provided, however, that paragraphs (a)(1)(i) and (a)(1)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed or furnished to the Commission by the registrant pursuant to Section 13 or Section 15(d) of the

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Securities Exchange Act of 1934 (15 U.S.C. 78m or 78o(d)) that are incorporated by reference in the registration statement.

(2) that, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) to remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of this offer.

(b) insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

(c) the undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

Signatures

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of St. Louis, State of Missouri, on the 6th day of January 2009.

Arch Coal, Inc.

By: /s/ John T. Drexler
John T. Drexler
Senior Vice President and Chief Financial Officer

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed below by the following persons in the capacities indicated:

<u>Signatures</u>	<u>Capacity</u>	<u>Date</u>
<u>*</u> Steven F. Leer	Chairman and Chief Executive Officer (Principal Executive Officer)	January 6, 2009
<u>/s/ John T. Drexler</u> John T. Drexler	Senior Vice President and Chief Financial Officer (Principal Financial Officer)	January 6, 2009
<u>/s/ John W. Lorson</u> John W. Lorson	Vice President and Chief Accounting Officer (Principal Accounting Officer)	January 6, 2009
<u>*</u> James R. Boyd	Director	January 6, 2009
<u>*</u> Frank M. Burke	Director	January 6, 2009
<u>*</u> John W. Eaves	President, Chief Operating Officer and Director	January 6, 2009
<u>*</u> Patricia F. Godley	Director	January 6, 2009
<u>*</u> Douglas H. Hunt	Director	January 6, 2009
<u>*</u> Brian J. Jennings	Director	January 6, 2009
<u>*</u> Thomas A. Lockhart	Director	January 6, 2009
<u>*</u> A. Michael Perry	Director	January 6, 2009
<u>*</u> Robert G. Potter	Director	January 6, 2009
<u>*</u> Theodore D. Sands	Director	January 6, 2009
<u>*</u> Wesley M. Taylor	Director	January 6, 2009

*By: /s/ Robert G. Jones
Robert G. Jones, attorney-in-fact

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Pursuant to the requirements of the Securities Act of 1933, the Plan Administrator has caused this registration statement to be signed on the Plan's behalf by the undersigned, thereunto duly authorized, in the City of St. Louis, State of Missouri, on the 6th day of January 2009.

Arch Coal, Inc. and Subsidiaries Employee Thrift Plan

By: /s/ Sheila B. Feldman

Sheila B. Feldman

Plan Administrator

[Arch Coal, Inc. letterhead]

January 6, 2009

Board of Directors
Arch Coal, Inc.
One CityPlace Drive, Suite 300
St. Louis, Missouri 63141

Dear Ladies and Gentlemen:

I am Assistant General Counsel and Assistant Secretary for Arch Coal, Inc., a Delaware corporation (the "Company"). This opinion letter is being furnished to you in connection with the registration under the Securities Act of 1933, as amended (the "Act"), of up to 1,000,000 shares of the Company's common stock, par value \$0.01 per share (the "Shares") which may be offered and sold under the Arch Coal, Inc. and Subsidiaries Employee Thrift Plan (the "Plan").

In connection herewith, I have examined the Registration Statement on Form S-8 (Reg. No. 333-_____) (the "Registration Statement") to be filed with the Securities and Exchange Commission under the Act. I have also examined originals or copies certified or otherwise identified to my satisfaction of such other corporate records, agreements and instruments of the Company, certificates of public officials and officers of the Company and such other documents, records and instruments, and I have made such legal and factual inquiries as I have deemed necessary or appropriate as a basis to render the opinion hereinafter expressed.

In my examination of the foregoing, I have assumed the genuineness of all signatures on all documents examined by me (except the signatures of officers of the Company), the legal competence and capacity of each person executing documents, the authenticity of all documents submitted to me as originals, the conformity to authentic originals of all documents submitted to me as certified or photostatted copies, and the due authorization, execution and delivery of all documents (other than due authorization, execution and delivery on behalf of the Company) where due authorization, execution and delivery are a prerequisite to the effectiveness thereof.

Based upon the foregoing and in reliance thereon, and subject to the exceptions, qualifications and limitations stated herein, I am of the opinion that:

1. The Company is a corporation duly incorporated, validly existing and in good standing under the laws of the State of Delaware.
2. The Shares have been duly authorized and, when offered and sold by the Company pursuant to the Plan, will be legally issued, fully paid and nonassessable.

The opinion expressed above is limited to the laws of the State of Missouri, the Federal laws of the United States of America and, to the extent required by the foregoing, the General Corporation Law of the State of Delaware as in effect (and published or otherwise generally available) on the date hereof, and I assume no obligation to revise or supplement the opinion should such law be changed by legislative action, judicial decision or otherwise. In rendering the opinion, I have not considered, and hereby disclaim any opinion as to, the application or impact of any laws, cases, decisions, rules or regulations of any other jurisdiction, court or administrative agency.

I hereby consent to the filing of this opinion letter as Exhibit 5.1 to the Registration Statement. In giving such consent, I do not thereby concede that I am within the category of persons whose consent is required under Section 7 of the Act or the rules and regulations of the Commission thereunder.

Sincerely,

/s/ Gregory A. Billhartz

Gregory A. Billhartz
Assistant General Counsel and Assistant Secretary

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the Registration Statement (Form S-8) pertaining to the Arch Coal, Inc. and Subsidiaries Employee Thrift Plan of our reports dated February 28, 2008, with respect to the consolidated financial statements and schedule of Arch Coal, Inc. included in its Annual Report (Form 10-K) for the year ended December 31, 2007, and the effectiveness of internal control over financial reporting of Arch Coal, Inc., filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

St. Louis, Missouri

January 6, 2009

Power of Attorney

KNOW ALL MEN BY THESE PRESENTS: That each of the undersigned directors and/or officers of Arch Coal, Inc., a Delaware corporation (the "Company"), hereby constitutes and appoints Steven F. Leer, John T. Drexler and Robert G. Jones, and each of them, his or her true and lawful attorneys-in-fact and agents, with full power to act without the other, to sign the Company's registration statement on Form S-8 and any and all amendments (including post-effective amendments) thereto, and to file the same, with all exhibits thereto, and all documents in connection therewith, with the Securities and Exchange Commission pursuant to the Securities Act of 1933, as amended, and to do and perform any and all other acts and things requisite and necessary to be done in connection with the foregoing as fully as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, may lawfully do or cause to be done by virtue hereof.

DATED: December 31, 2008

Signatures	Capacity
/s/ Steven F. Leer Steven F. Leer	Chairman and Chief Executive Officer
/s/ James R. Boyd James R. Boyd	Director
/s/ Frank M. Burke Frank M. Burke	Director
/s/ John W. Eaves John W. Eaves	President, Chief Operating Officer and Director
/s/ Patricia F. Godley Patricia F. Godley	Director
/s/ Douglas H. Hunt Douglas H. Hunt	Director
/s/ Brian J. Jennings Brian J. Jennings	Director
/s/ Thomas A. Lockhart Thomas A. Lockhart	Director
/s/ A. Michael Perry A. Michael Perry	Director
/s/ Robert G. Potter Robert G. Potter	Director
/s/ Theodore D. Sands Theodore D. Sands	Director
/s/ Wesley M. Taylor Wesley M. Taylor	Director