

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

**FORM S-8**  
**REGISTRATION STATEMENT**  
**UNDER**  
**THE SECURITIES ACT OF 1933**

**AIR PRODUCTS AND CHEMICALS, INC.**

(Exact Name of Registrant as Specified in Its Charter)

**Delaware**

(State or Other Jurisdiction of Incorporation or Organization)

23-1274455

(I.R.S. Employer Identification No.)

7201 Hamilton Boulevard, Allentown, Pennsylvania 18195-1501

(Address of Principal Executive Offices) (Zip Code)

**Air Products and Chemicals, Inc. Long-Term Incentive Plan**

(Full Title of the Plan)

**Mary T. Afflerbach, Corporate Secretary and Chief Governance Officer**

**Air Products and Chemicals, Inc., 7201 Hamilton Boulevard, Allentown, PA 18195-1501**

(Name and Address of Agent for Service)

610-481-4911

(Telephone Number, Including Area Code, of Agent for Service)

**CALCULATION OF REGISTRATION FEE**

<b>Titles of securities to be registered</b>	<b>Amount to be registered</b>	<b>Proposed maximum offering price per share</b>	<b>Proposed maximum aggregate offering price</b>	<b>Amount of registration fee</b>
Common Stock, par value \$1	346,248	\$88.49	\$30,639,485.52	\$3,557.24 <sup>(1)</sup>
Options Granted, 12/01/10	932,026	\$86.39	\$80,517,726.14	\$9,348.11 <sup>(2)</sup>
	1,278,274		\$111,157,211.66	\$12,905.35

- (1) The registration fee with respect to these shares has been computed in accordance with paragraphs (c) and (h) of Rule 457, based upon the average of the reported high and low sales prices of shares of Common Stock on 10 March 2011 (i.e., \$88.49 per share).
- (2) The registration fee with respect to these shares has been computed in accordance with paragraph (h) of Rule 457 based upon the stated exercise price of the Options.

Air Products and Chemicals, Inc. (the "Company"), by the filing of this Registration Statement, hereby registers additional shares of common stock of the Company, for distribution pursuant to the Long-Term Incentive Plan (the "Plan"). These are securities of the same class as the securities registered on Form S-8, Registration Statement No. 333-103809 for distribution pursuant to the Plan. Accordingly, the contents of Registration Statement No. 333-103809 are incorporated herein by reference. The Company's report on Form 10-K for the year ended 30 September 2010 and the Form 10-Q for the period ended 31 December 2010 are also incorporated herein by reference.

#### EXHIBITS

23. Consent of Independent Registered Public Accounting Firm
24. Power of Attorney.



Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed by the following persons in the capacities and on the date indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ John E. McGlade</u> John E. McGlade	Director, Chairman of the Board, President and Chief Executive Officer (Principal Executive Officer)	17 March 2011
<u>/s/ Paul E. Huck</u> Paul E. Huck	Senior Vice President and Chief Financial Officer (Principal Financial Officer)	17 March 2011
<u>/s/ M. Scott Crocco</u> M. Scott Crocco	Vice President and Corporate Controller (Principal Accounting Officer)	17 March 2011
<u>*</u> Mario L. Baeza	Director	17 March 2011
<u>*</u> William L. Davis, III	Director	17 March 2011
<u>*</u> Chadwick C. Deaton	Director	17 March 2011
<u>*</u> Michael J. Donahue	Director	17 March 2011
<u>*</u> Ursula O. Fairbairn	Director	17 March 2011
<u>*</u> W. Douglas Ford	Director	17 March 2011

Signature

Title

Date

\*

Director

17 March 2011

Edward E. Hagenlocker

\*

Director

17 March 2011

Evert Henkes

\*

Director

17 March 2011

Margaret G. McGlynn

\*

Director

17 March 2011

Lawrence S. Smith

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No opinion of counsel is being filed because the Common Stock to be distributed in connection with the Plan will consist exclusively of previously issued shares that are presently held by the registrant as treasury shares and will not constitute original issuance shares; further, no opinion is being furnished with respect to ERISA compliance because the Plan covered by the registration statement is not subject to the requirements of ERISA.

**Consent of Independent Registered Public Accounting Firm**

The Board of Directors  
Air Products and Chemicals, Inc.:

We consent to the use of our report dated 23 November 2010, with respect to the consolidated balance sheets of Air Products and Chemicals, Inc. and Subsidiaries as of 30 September 2010 and 2009, and the related consolidated income statements and consolidated statements of equity and cash flows for each of the years in the three-year period ended 30 September 2010, the related financial statement schedule, and the effectiveness of internal control over financial reporting as of 30 September 2010 which report appears in the 30 September 2010 Annual Report on Form 10-K of Air Products and Chemicals, Inc. and incorporated herein by reference.

/s/ KPMG LLP

Philadelphia, Pennsylvania  
17 March 2011

## POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints JOHN E. McGLADE or MARY T. AFFLERBACH or PAUL E. HUCK or JOHN D. STANLEY, acting severally, his/her true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for him/her and in his/her name, place and stead, in any and all capacities, to sign one or more Registration Statements, and any amendments thereto, which may be required in connection with (i) the registration of Common Stock, Preferred Stock, Depositary Shares, Debt Securities, and Warrants, including the registration of Common Stock for issuance under any employee benefit or compensation plan, (ii) the registration of interests under any employee benefit or compensation plan maintained by the Company or (iii) any fundamental change in the information contained in such Registration Statements, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney-in-fact and agent full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he/she might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent, or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities and Exchange Act of 1933, this Power of Attorney has been signed below by the following persons in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ John E. McGlade</u> John E. McGlade	Director and Chairman of the Board (Principal Executive Officer)	18 November 2010
<u>/s/ Mario L. Baeza</u> Mario L. Baeza	Director	18 November 2010
<u>/s/ William L. Davis, III</u> William L. Davis, III	Director	18 November 2010



<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Chadwick C. Deaton</u> Chadwick C. Deaton	Director	18 November 2010
<u>/s/ Michael J. Donahue</u> Michael J. Donahue	Director	18 November 2010
<u>/s/ Ursula O. Fairbairn</u> Ursula O. Fairbairn	Director	18 November 2010
<u>/s/ W. Douglas Ford</u> W. Douglas Ford	Director	18 November 2010
<u>/s/ Edward E. Hagenlocker</u> Edward E. Hagenlocker	Director	18 November 2010
<u>/s/ Evert Henkes</u> Evert Henkes	Director	18 November 2010
<u>/s/ Margaret G. McGlynn</u> Margaret G. McGlynn	Director	18 November 2010
<u>/s/ Lawrence S. Smith</u> Lawrence S. Smith	Director	18 November 2010