

Registration No. -----

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SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, DC 20549

FORM S-8

REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933

AIR PRODUCTS AND CHEMICALS, INC.

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(Exact Name of Registrant as Specified in Its Charter)

Delaware

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(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)

W. Douglas Brown, Vice President, General Counsel and Secretary  
Air Products and Chemicals, Inc., 7201 Hamilton Boulevard,  
Allentown, PA 18195-1501

-----  
(Name and Address of Agent for Service)

610-481-4911

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

CALCULATION OF REGISTRATION FEE

Titles of securities to be registered	Amount to be registered	Proposed maximum offering price per share	Proposed maximum aggregate offering price	Amount of registration fee
Common Stock, par value \$1	609,563	\$63.82	\$38,902,310.66	\$4,578.80(1)
Options Granted, 10/01/04	2,565,500	\$54.17	\$138,973,135.00	\$16,357.14(2)
Options Granted, 01/27/05	18,000	\$57.74	\$1,039,320.00	\$122.33(2)
	3,193,063			\$21,058.27

(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 15 March 2005 (i.e., \$63.82 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 2004 and the Form 10-Q for the period ended 31 December 2004 are also incorporated herein by reference.

#### EXHIBITS

- 4.1. By-Laws of the Company. (Filed as Exhibit 3.1 to the Company's Form 8-K Report dated 18 September 1997.)
- 4.2. Restated Certificate of Incorporation of the Company. (Filed as Exhibit 3.2 to the Company's Form 10-K Report for the fiscal year ended 30 September 1987.)
- 4.3. Amendment to the Restated Certificate of Incorporation of the Company dated 25 January 1996. (Filed as Exhibit 3.3 to the Company's Form 10-K Report for the fiscal year ended 30 September 1996.)
- 4.4. Rights Agreement, dated as of 19 March 1998, between the Company and First Chicago Trust Company of New York. (Filed as Exhibit 1 to the Company's Form 8-A Registration Statement dated 19 March 1998, as amended by Form 8-A/A dated 16 July 1998.)
23. Consent of Independent Registered Public Accounting Firm
24. Power of Attorney.

SIGNATURES

The Registrant. 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 Allentown, Commonwealth of Pennsylvania, on this 22nd day of March 2005.

AIR PRODUCTS AND CHEMICALS, INC.  
(Registrant)

By: /s/ W. Douglas Brown

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W. Douglas Brown\*  
Vice President, General Counsel  
and Secretary

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\* W. Douglas Brown, Vice President, General Counsel and Secretary, by signing his name hereto, signs this registration statement on behalf of the registrant and, for each of the persons indicated by asterisk on pages 3 and 4 hereof, pursuant to a power of attorney duly executed by such persons which is filed with the Securities and Exchange Commission herewith.

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.

Signature -----	Title -----	Date ----
/s/ John P. Jones III ----- John P. Jones III	Director, Chairman of the Board, President, and Chief Executive Officer (Principal Executive Officer)	22 March 2005
/s/ Paul E. Huck ----- Paul E. Huck	Vice President and Chief Financial Officer (Principal Financial Officer and Accounting Officer)	22 March 2005
* ----- Mario L. Baeza	Director	22 March 2005
* ----- Michael J. Donahue	Director	22 March 2005
* ----- Ursula F. Fairbairn	Director	22 March 2005
* ----- W. Douglas Ford	Director	22 March 2005
* ----- Edward E. Hagenlocker	Director	22 March 2005
* ----- James F. Hardymon	Director	22 March 2005
* ----- Terrence Murray	Director	22 March 2005

Signature

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Title

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Date

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Lawrence S. Smith

Director

22 March 2005

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Lawrason D. Thomas

Director

22 March 2005

EXHIBIT INDEX

Exhibit -----		Page -----
4.1.	By-Laws of the Company. (Filed as Exhibit 3.1 to the Company's Form 8-K Report dated 18 September 1997.)	N/A
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4.3.	Amendment to the Restated Certificate of Incorporation of the Company dated 25 January 1996. (Filed as Exhibit 3.3 to the Company's Form 10-K Report for the fiscal year ended 30 September 1996.)	N/A
4.4.	Rights Agreement, dated as of 19 March 1998, between the Company and First Chicago Trust Company of New York. (Filed as Exhibit 1 to the Company's Form 8-A Registration Statement dated 19 March 1998, as amended by Form 8-A/A dated 16 July 1998.)	N/A
23.	Consent of Independent Registered Public Accounting Firm	6
24.	Power of Attorney	7

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  
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To the Shareholders and Board of Directors  
Air Products and Chemicals, Inc.:

We consent to the use of our reports dated 27 October 2004, with respect to the consolidated balance sheets of Air Products and Chemicals, Inc. and subsidiaries as of 30 September 2004 and 2003, and the related consolidated statements of income, cash flows and shareholders' equity for each of the years in the three year period ended 30 September 2004, and the related financial statement schedule, which reports appear in the 30 September 2004 annual report on Form 10-K of Air Products and Chemicals, Inc., incorporated herein by reference.

/s/ KPMG LLP

Philadelphia, Pennsylvania  
16 March 2005



## POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints JOHN P. JONES III or PAUL E. HUCK or W. DOUGLAS BROWN, 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.

Signature -----	Title -----	Date -----
/s/ John P. Jones III ----- John P. Jones III	Director, Chairman of the Board (Principal Executive Officer)	18 November 2004
/s/ Mario L. Baeza ----- Mario L. Baeza	Director	18 November 2004
/s/ Michael J. Donahue ----- Michael J. Donahue	Director	18 November 2004

Signature

Title

Date

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/s/ Ursula F. Fairbairn

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Ursula F. Fairbairn

Director

18 November 2004

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/s/ W. Douglas Ford

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W. Douglas Ford

Director

18 November 2004

-----  
/s/ Edward E. Hagenlocker

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Edward E. Hagenlocker

Director

18 November 2004

-----  
/s/ James F. Hardymon

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James F. Hardymon

Director

18 November 2004

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/s/ Terrence Murray

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Terrence Murray

Director

18 November 2004

-----  
/s/ Lawrence S. Smith

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Lawrence S. Smith

Director

18 November 2004

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/s/ Lawrason D. Thomas

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Lawrason D. Thomas

Director

18 November 2004