

Registration No. \_\_\_\_\_

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SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, DC 20549

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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

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

7201 Hamilton Boulevard, Allentown, Pennsylvania 18195-1501

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(Address of Principal Executive Offices) (Zip Code)

Air Products PLC and Air Products Group Limited  
 U.K. Savings-Related Share Option Schemes  
 (Full Title of the Plan)

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

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(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	620,446	\$57.21	\$35,495,715.66	\$4,177.85(1)

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(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 9 December 2004 (i.e., \$57.21 per share).

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 Air Products PLC and Air Products Group Limited U.K. Savings-Related Share Option Schemes (the "Schemes"). These are securities of the same class as the securities registered on Form S-8, Registration Statement No. 33-2068 for distribution pursuant to the Schemes. Accordingly, the contents of Registration Statement No. 33-2068 are incorporated herein by reference. The registrants report on Form 10-K for the year ended 30 September 2004 is 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
- 23A. Consent of Arthur Andersen LLP (omitted pursuant to Rule 537a as described in the Exhibit).
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 15th day of December 2004.

AIR PRODUCTS AND CHEMICALS, INC.  
(Registrant)

By: /s/ W. Douglas Brown

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

- - - - -  
\* 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

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)	15 December 2004
/s/ Paul E. Huck ----- Paul E. Huck	Vice President and Chief Financial Officer (Principal Financial Officer and Accounting Officer)	15 December 2004
* ----- Mario L. Baeza	Director	15 December 2004
* ----- Michael J. Donahue	Director	15 December 2004
* ----- Ursula F. Fairbairn	Director	15 December 2004
* ----- W. Douglas Ford	Director	15 December 2004
* ----- Edward E. Hagenlocker	Director	15 December 2004
* ----- James F. Hardymon	Director	15 December 2004
* ----- Terrence Murray	Director	15 December 2004

SIGNATURE

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Lawrence S. Smith

TITLE

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Director

DATE

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15 December 2004

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Lawrason D. Thomas

Director

15 December 2004

EXHIBIT INDEX

Exhibit - - - - -	Page - - - -
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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 or under the registrant's Flexible Employee Benefits Trust and will not constitute original issuance shares; further, no opinion is being furnished with respect to ERISA compliance because the Plans covered by the registration statement are not subject to the requirements of ERISA.

Consent of Independent Registered Public Accounting Firm

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  
10 December 2004

## Consent of Arthur Andersen LLP

The Company's financial statements for prior years, incorporated herein by reference, were audited by Arthur Andersen LLP ("Andersen"). Subsequently, Andersen was dismissed as the Company's independent auditors.

Section 11(a) of the Securities Act of 1933 (the "Act") provides that in case any part of a registration statement, at the time it became effective, contains an untrue statement of a material fact or omits to state a material fact necessary to make the statements therein not misleading, any person acquiring a security pursuant to the registration statement (unless at the time of such acquisition he knew of the untruth or omission) may sue, among others, any accountant who has consented to be named in the registration statement as having prepared or certified such part of the registration statement. After reasonable efforts, the Company has been unable to obtain the consent of Andersen to the incorporation by reference in this Registration Statement of Andersen's reports on its audit of the Company's financial statements referred to above. Under these circumstances, Rule 437a under the Act permits the Company to file this Registration Statement without such consents. Without such consents, a person acquiring shares of the Company pursuant to this Registration Statement will be unable to assert a claim against Andersen under Section 11(a) of the Act in the event of an untrue statement of material fact or a material omission in the financial statements audited by Andersen or in its reports with respect thereto.

## 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

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/s/ John P. Jones III

Director, Chairman of the Board  
(Principal Executive Officer)

18 November 2004

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John P. Jones III

/s/ Mario L. Baeza

18 November 2004

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Mario L. Baeza

Director

/s/ Michael J. Donahue

18 November 2004

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Michael J. Donahue

Director

## SIGNATURE

## TITLE

## DATE

-----  
/s/ Ursula F. Fairbairn

18 November 2004

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Ursula F. Fairbairn

Director

/s/ W. Douglas Ford

18 November 2004

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W. Douglas Ford

Director

/s/ Edward E. Hagenlocker

18 November 2004

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Edward E. Hagenlocker

Director

/s/ James F. Hardymon

18 November 2004

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James F. Hardymon

Director

/s/ Terrence Murray

18 November 2004

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Terrence Murray

Director

/s/ Lawrence S. Smith

18 November 2004

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Lawrence S. Smith

Director

/s/ Lawrason D. Thomas

18 November 2004

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Lawrason D. Thomas

Director