



**PRENTISS  
SMITH & CO**

Socially Responsible Investment Report for:

## Air Products & Chemicals

Allentown, PA

Ticker: APD US Equity

Website: [www.airproducts.com](http://www.airproducts.com)

Last Updated: 03-09-2022

# I. Exclusionary Screening

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Does Air Products & Chemicals appear on any of the following lists? In our exclusionary screening, a single appearance disqualifies an investment.

## Fossil Fuels & Precious Metals Mining

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- BICS - Oil, Gas & Coal
- BICS - Precious Metals Mining
- Carbon Underground 200

## Agrochemicals & Animal Cruelty

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- BICS - Crop Chemicals & Fertilizers
- Cruelty Free Investing 10 Worst

## Pornography, Gambling & Tobacco

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- BICS - Casinos
- BICS - Tobacco
- Pornography

## Defense & Retail Gun Sales

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- BICS - Defense Primes
- SIPRI Top 100
- Gun Retailer
- NRA Top Industry Allies

## Private Prisons

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- BICS - Security Services

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BICS = Bloomberg Industry Classification Systems

SIPRI = Stockholm International Peace Research Institute  
NRA = National Rifle Association

## II. Environmental, Social & Governance Data

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What quantifiable environmental, social and governance data, policies or recognition does Air Products & Chemicals exhibit? Positive factors may help support a decision to invest.

### General

Barron's 100 Most Sustainable Companies 2022

**38**

MSCI ESG Rating

**BBB**

S&P Sustainability Distinction

**Member**

Just Capital Overall (1-954)

**229**

Dow Jones Sustainability North America Index 2021

**Listed**

GRI Criteria Compliance

**Yes**

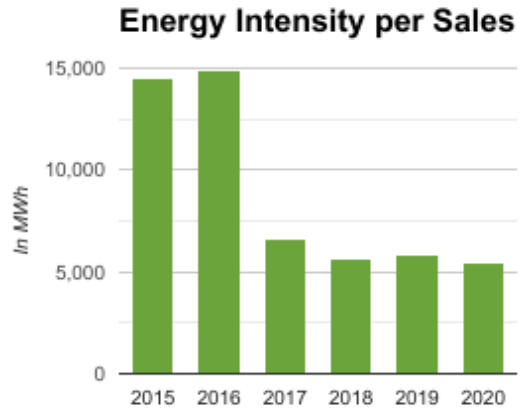
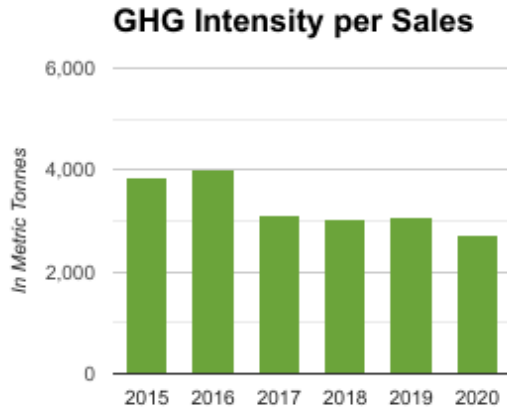
### Climate Change & Fossil Fuels

Corporate Knights Clean 200

**124**

CDP Climate Change Score 2021

**B**



Initiatives and Policies in Place:

- **Climate Change Opportunities**
- **Climate Change Policy**

## Environmental Stewardship

Just Capital - Environment (1-954)

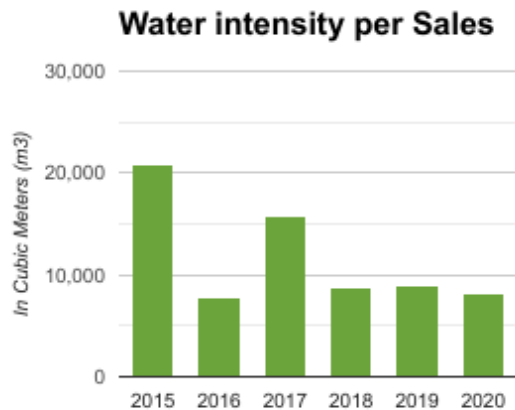
**197**

Green Buildings

**Yes**

Publicly Disclosed Sustainable Supply Guidelines  
Encompassing ESG Area

**Yes**



Initiatives and Policies in Place:

- **Sustainable Development Goals Target Policy**

- **Social Supply Chain Management**
- **Biodiversity Policy**
- **Water Policy**
- **Waste Reduction**
- **Environmental Quality Management**
- **Environmental Supply Management**
- **Emission Reduction**
- **Energy Efficiency Policy**

## Human Rights & Well-Being

As You Sow Racial Justice Score (-23 to 62)

**17**

Just Capital - Workers (1-954)

**102**

Initiatives and Policies in Place:

- **Anti-child Labor Policy**
- **Human Rights Policy**
- **Equal Opportunity Policy**

Just Capital - Communities (1-954)

**399**

Just Capital - Customers (1-954)

**754**

## Diversity, Equity, Inclusion and Justice

Forbes Best Employers for Diversity (1-500)

**128**

HRC Equality Index (100 points)

**100**

Women on the Board

**33%**

CEO Action for Diversity Pledge

**Signatory**

Women Employees

**21%**

Number of Women on the Board

**3**

Number of Women Executives

**0**

Women in Management

**17%**

Women Executives

**0%**

Women in Middle Management

**21%**

### Corporate Responsibility

Just Capital - Shareholders (1-954)

**422**

Employee CSR Training

**Yes**

Independent Directors

**89%**

CPA-Zicklin Political Disclosure and Accountability  
Score (1-100)

**31**

Shareholder vote on management remuneration

**94.55%**

Community Spending (\$ USD millions)

**9.8**

Initiatives and Policies in Place:

- **Whistle Blower Employee Protection Policy**
- **Ethics Policy**

Data sources may include:

- Sustainability and other report(s) published by the company.
- Banktrack Human Rights Benchmark
- Barron's 100 Most Sustainable US Companies
- Bloomberg LP ESG Data (via Data License).
- CDP
- CEO Action for Diversity & Inclusion Pledge
- Climate Accountability Institute (CAI)
- Corporate Human Rights Benchmark
- Digital Rights Corporate Accountability Index
- Dow Jones Sustainability Indices (DJSI)
- EPA's Green Power Partnership
- Equileap's Top 100 Companies for Gender Equality
- Forbes World's Best Employers
- Fortune's 50 Best Workplaces for Charity and Volunteering
- Fossil Free Funds
- Global Reporting Initiative (GRI)

- Great Places to Work
- HRC's 2020 Corporate Equality Index
- Institute for Clinical and Economic Review (ICER)
- Just Capital Rankings
- KnowTheChain Benchmark
- MSCI ESG Ratings
- National Rifle Association (NRA)
- Newsweek Green Rankings
- PEOPLE's 50 Companies That Care
- Points of Light Civic 50 Honorees
- RobecoSAM Corporate Sustainability Assessment
- Roundtable on Sustainable Palm Oil (RSPO)
- Science-Based Targets initiative (SBTi)
- State Street Global Advisors' Gender Diversity Index
- Stockholm International Peace Research Institute (SIPRI)
- Task Force on Climate-related Financial Disclosures (TCFD)
- The 2019 Top 50 DiversityInc
- The Climate Group's RE100, EV100 and EP100

### III. Research Narrative

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What else has our research process told us about how Air Products & Chemicals conducts business, in terms of its products and services, its environmental impact, and its approach to governance?

#### Summary

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Air Products & Chemicals, Inc. (NYSE: APD) is one of the world's largest producers of industrial gases and chemicals, including liquefied natural gas and equipment. The company also says it is the world's largest producer of hydrogen, and has ambition to be the world's top producer of green hydrogen (hydrogen produced from water via electrolysis) in the next 5 years. Air Products is jointly developing what it says will be the world's largest green hydrogen facility in Saudi Arabia. The company is also trialing carbon capture technologies in several of its own facilities, and in one joint project. Air Products has an admirable track record of reducing its carbon intensity and water usage over the last several years, and has a strong goal to further reduce its carbon intensity by 2030. The company publishes workforce diversity statistics, and has modest but meaningful diversity goals.

While Air Products appears well-positioned to deliver on clean hydrogen fuel and carbon capture technologies, the company's ambitions outstrip its current operations. The vast majority of hydrogen production today comes from fossil fuels, and hydrogen's most common use is in oil refining. Air Products' carbon capture technologies also have yet to be tested in the market. So while the company's goals appear closely aligned with a sustainable energy future, today important areas of its business remain dependent on the use of fossil fuels. Legitimate questions about the climate impacts of "blue hydrogen" and the harmful potential of hydrogen leaks will also need to be addressed going forward.

#### Products & Services

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Air Products & Chemicals is a top global producer of industrial gases, chemicals, and related equipment for a variety of industries, including refining, manufacturing, metals, electronics, and



food and beverage. Air Products says it is currently the world's leading supplier of liquified natural gas technology and equipment.<sup>1</sup> The company is also defining itself as a leader in the hydrogen energy transition; in 2020 it began joint development of the world's largest green hydrogen facility in Saudi Arabia<sup>2</sup> and the world's largest blue hydrogen facility in Louisiana in 2021.<sup>3</sup> Furthering this momentum, Air Products teamed up with World Energy to build North America's first SAF (Sustainable Aviation Fuel) facility in Paramount, California in 2022.<sup>4</sup> Air Products is also operating additional international projects in carbon capture and gasification (the sustainable conversion of natural resources into syngas to produce high-efficiency power, fuels, and chemicals).

Air Products was founded in 1940 by Leonard Parker Pool. With the help of an engineer named Frank Pavlis, Pool had developed an oxygen compressor that used liquid oxygen and graphite as lubricants in lieu of water, thus creating an alternative that was less expensive to build and operate. Given that transportation was the greatest actual cost associated with oxygen production, Pool's fundamental vision was to provide customers with the training and equipment to autonomously distill oxygen on-site.

Despite the competitive advantage of Pool's innovative generator, the fledgling company was strained by the lingering effects of the Great Depression and struggled against established competitors. But with the onset of WWII, the company's fortunes began to improve as Pool secured government contracts to supply the military with mobile oxygen generators for use in high-altitude flights. In the post-war years, Pool had to return to the drawing board in terms of attracting investors and forming a client base, but ultimately raised enough investment to construct a new plant and to furnish Weirton Steel with one of the largest oxygen generators to have been built.

With the Soviet Union's 1957 deployment of Sputnik 1 using a liquid hydrogen rocket, the United States ramped up its investment in the hydrogen race. Air Products later won the competition to become the Air Force's hydrogen supplier; by this point, the company operated a multitude of plants capable of producing tonnage quantities of both hydrogen and oxygen. In 1962, Air Products made its initial public offering after surpassing \$100 million in sales. By the mid-1960s, the company had acquired subsidiaries in Belgium, West Germany, and South Africa. In 1975, Air Products landed a \$287 million contract with NASA to become the chief liquid hydrogen supplier

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<sup>1</sup> <https://www.airproducts.com/industries/lng>

<sup>2</sup> <https://www.greentechmedia.com/articles/read/us-firm-unveils-worlds-largest-green-hydrogen-project>

<sup>3</sup> <https://www.airproducts.com/campaigns/la-blue-hydrogen-project>

<sup>4</sup>

<https://www.airproducts.com/news-center/2022/04/0422-air-products-and-world-energy-sustainable-aviation-fuel-facility-in-california>

for the United States' new space shuttle program.<sup>5</sup> Three years later, the company was officially listed in the Fortune 500 after achieving \$1 billion in sales.

The company's development through the 80s and 90s was characterized by global expansion and diversification into environmental and energy markets, with a focus on cogeneration (energy recovery from solid waste, such as trash-to-steam) and flue gas desulfurization, a process that removes sulfur dioxide from the exhaust of coal-fired power plants, thereby reducing some of the negative environmental and health impacts of coal burning. The company also continued to grow its electronics and chemicals business segments. By the early 2000s, Air Products was calling itself one of the "world's leading integrated industrial gas companies."<sup>6</sup>

Today, the company defines its core competency as being its "ability to develop, execute, own, and operate complex process facilities that can transform local economies."<sup>7</sup> In the words of Air Products CEO Seifi Ghasemi, "Put simply, sustainability is our growth strategy at Air Products. Sustainability creates our growth opportunities, and our growth opportunities support our sustainability goals and focus."<sup>8</sup> Gasification, carbon capture, and hydrogen are key technologies to the company's participation in the clean energy transition, which in the last decade has become a chief source of both the company's mission and growth.

## Environment

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In 2021, Air Products & Chemicals was reportedly the top climate-aligned company on Barron's list of 100 Most Sustainable Companies.<sup>9</sup> The company has a goal to reduce its CO2 emissions *intensity* 33% by 2030, and because emissions intensity pegs emissions to sales, this goal should grow with the company. Air Products also reports that 57% of its revenues come from sustainable offerings, and that 72 million metric tons of CO2 have been avoided through the use of its products.<sup>10</sup>

As a company that says its higher purpose is to "innovate solutions to the world's most significant energy and environmental sustainability challenges," many of Air Products' core offerings have direct environmental benefits. Gasification technology, for instance, converts fossil fuels to industrial chemicals and energy while reducing pollutants like sulfur dioxide, producing easily

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<sup>5</sup> <https://airproducts.uz/EN/pdf/company-history.pdf>

<sup>6</sup> [https://www.airproducts.com/-/media/airproducts/files/en/42497\\_company\\_history.pdf](https://www.airproducts.com/-/media/airproducts/files/en/42497_company_history.pdf)

<sup>7</sup> <https://www.airproducts.com/-/media/airproducts/files/en/900/900-21-010-us-sustainability-report-2021.pdf>

<sup>8</sup> <https://www.airproducts.com/-/media/airproducts/files/en/900/900-21-010-us-sustainability-report-2021.pdf>

<sup>9</sup> <https://finance.yahoo.com/news/air-products-ranked-top-climate-153000041.html>

<sup>10</sup> <https://www.airproducts.com/-/media/airproducts/files/en/900/900-21-010-us-sustainability-report-2021.pdf>

sequestered carbon dioxide as a by-product. Liquefied natural gas and methanol produced from coal are two examples of fuels that can burn much cleaner in their liquefied form.

While Air Products reports great promise from carbon capture technologies, the examples given by the company are mainly in its own operations, including through the gasification process and during the production of hydrogen, for example, at its Port Arthur, Texas hydrogen plant. Other trial carbon capture projects are underway connected with Air Products facilities in Spain and the Netherlands.<sup>11</sup>

As the self-described “world’s largest hydrogen producer,” Air Products has over 110 hydrogen production facilities and extensive hydrogen fueling infrastructure already in place, including retail dispensing (similar to gas stations).<sup>12</sup> In theory, this should position the company to be a major contributor to a transition to hydrogen fuel for transportation and heavy industrial uses, which many view as critically necessary for addressing climate change.<sup>13</sup> The company says its joint venture in Saudia Arabia will be the world’s largest green hydrogen facility when it goes onstream in 2025, producing large volumes of hydrogen via clean electrolysis, along with nitrogen by air separation and green ammonia.<sup>14</sup> Air Products is also investing heavily in “blue hydrogen,” which many regard as a highly sustainable energy source. But researchers have questioned whether the true emissions of Steam Methane Reforming technology, which is used to create hydrogen from natural gas and recapture carbon in the process, are truly any lower than burning natural gas directly.<sup>15</sup> At a net-zero hydrogen production facility being built in Alberta, Canada, Air Products is taking a different approach, called Auto-Thermal Reforming, which it says will capture more carbon and, along with on-site hydrogen power generation, deliver truly net-zero “blue hydrogen.”<sup>16</sup>

While Air Products may be well-positioned to expand the world’s use of green hydrogen as part of a transition to more renewable sources of energy, it should be noted that the vast majority of hydrogen currently being produced comes from fossil fuels, and is most heavily used in fossil fuel refining.<sup>17</sup><sup>18</sup> The potential for leaks is also a major concern with hydrogen fuel, since near-term emissions from leaked hydrogen can be up to 33 times as potent as carbon emissions (although

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<sup>11</sup> <https://www.airproducts.com/-/media/airproducts/files/en/900/900-21-010-us-sustainability-report-2021.pdf>

<sup>12</sup> <https://www.airproducts.com/-/media/airproducts/files/en/900/900-21-010-us-sustainability-report-2021.pdf>

<sup>13</sup> <https://www.weforum.org/agenda/2022/03/hydrogen-decarbonization-climate-change-energy>

<sup>14</sup> <https://www.airproducts.com/-/media/airproducts/files/en/900/900-21-010-us-sustainability-report-2021.pdf>

<sup>15</sup> <https://www.nytimes.com/2021/08/12/climate/hydrogen-fuel-natural-gas-pollution.html>

<sup>16</sup> <https://www.airproducts.com/campaigns/alberta-net-zero-hydrogen-complex>

<sup>17</sup> <https://www.carbonbrief.org/in-depth-ga-does-the-world-need-hydrogen-to-solve-climate-change/>

<sup>18</sup> <https://www.iea.org/reports/the-future-of-hydrogen>

the long-term emissions of carbon are ultimately worse).<sup>19</sup> In 2019, an incident at an Air Products plant in California led to a significant hydrogen leak and explosion.<sup>20</sup>

Similarly, while Air Products' gasification and carbon capture efforts may significantly reduce emissions, current efforts are taking place within the framework of a world powered by fossil fuels, meaning that these technologies may ultimately rely on the continued use of fossil fuels to be profitable.

Within Air Products' own operations, 2020 Scope 1 emissions saw a 10% YoY reduction, and Scope 2 emissions saw an 8% YoY reduction, in part from renewable energy purchases that included a new, large-scale solar plan in the Southwestern US. In 2021, Air Products reported emissions intensity reductions of 4% (alongside 16% revenue growth), and said it was on track to meet its 2030 emissions intensity goal.<sup>21 22</sup> From 2015 to 2020, the company also reduced its water consumption by 26%. Air Products also prizes efficiency, and reports large volumes of "avoided" emissions through internal efficiency improvements as well as the use of its products by customers.<sup>23</sup>

## Management Integrity and Ethics

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Air Products & Chemicals has been run since July 2014 by CEO, President and Board Chair Seifi Ghasemi. Ghasemi has a background in chemicals and metals, including 14 years of leadership roles in lithium and advanced materials. Ghasemi sits on the Boards of Directors of the US-India Strategic Partnership Forum and the US-China Business Council. Ghasemi has said he wants Air Products to be the world's top green hydrogen producer in 5 years.<sup>24</sup>

Air Products has nearly 20,000 employees worldwide. The company has received some recognition for its diversity efforts, and has set modest diversity goals including 28% female representation in its professional and managerial population globally by 2025 (up from 25% in 2020) and 20% minority representation in its professional and managerial population in the United States by 2025 (up from 17% in 2020).<sup>25</sup> The company lists safety and diversity as two of its key

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<sup>19</sup> <https://financialpost.com/pmn/business-pmn/miracle-fuel-hydrogen-can-actually-make-climate-change-worse>

<sup>20</sup> [https://h2tools.org/sites/default/files/2021-06/AP\\_Santa\\_Clara\\_Incident\\_Review\\_Report\\_Rev1.pdf](https://h2tools.org/sites/default/files/2021-06/AP_Santa_Clara_Incident_Review_Report_Rev1.pdf)

<sup>21</sup> <https://www.airproducts.com/-/media/airproducts/files/en/900/900-22-005-us-sustainability-report-2022.pdf>

<sup>22</sup> <https://www.macrotrends.net/stocks/charts/APD/air-products-and-chemicals/revenue>

<sup>23</sup> <https://www.airproducts.com/-/media/airproducts/files/en/900/900-21-010-us-sustainability-report-2021.pdf>

<sup>24</sup> <https://www.reuters.com/business/cop/exchange-hydrogen-wave-2022-01-27/>

<sup>25</sup> <https://www.airproducts.com/-/media/airproducts/files/en/900/900-21-010-us-sustainability-report-2021.pdf>

employee goals. In 2020, Air Products' recordable incident rate decreased year over year, along with other small improvements in metrics of employee safety.

Air Products' Board of Directors has 8 members, including 2 women and 3 non-white members. Its executive team of 9 also has 2 women, and 3 non-white executives. Air Products' overall workforce is 21% female. CEO Ghasemi is a signatory to the CEO Action for Diversity Pledge, and the company receives a perfect score from the Human Rights Campaign. In 2020, its global employee turnover rate was 7.8%, which included both voluntary and involuntary turnover. Air Products reports that 25% of its employees are in collective bargaining units.<sup>26</sup>

Air Products made \$9.8 million in community donations in 2020, including \$3.4 million to the United Way. Our research did not find evidence of significant legal controversies or major environmental fines.

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<sup>26</sup> <https://www.airproducts.com/-/media/airproducts/files/en/900/900-21-010-us-sustainability-report-2021.pdf>

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