



July 17, 2023

CPSC Staff¹ Statement on Euromonitor Consulting report “Aerosol Duster Study: Final Report”

To support the work of CPSC staff for its review and recommendations related to the aerosol duster petition,² CPSC awarded contract 61320622A0003 to Industrial Economics, Inc. (IEc), who subcontracted Euromonitor Consulting (Euromonitor) under task order 61320623F2011 to perform the following task:

Develop and update key market data for the U.S aerosol duster product market in a U.S. Market Analysis of Aerosol Duster Products (ADP Market Analysis). The objective of the ADP Market Analysis is to identify the characteristics of the U.S. aerosol duster product market in detail. The ADP Market Analysis will consist of a final report and supporting database files. The report and supporting database files may be made available to the public.

The report titled, “Aerosol Duster Study: Final Report,” presents the results of work by Euromonitor. Euromonitor created an Aerosol Duster Market Analysis that’s objective is to identify the characteristics of the U.S. market for aerosol dusters in detail. From this analysis, Euromonitor found that the 2022 U.S. aerosol duster market was 29.9 million units sold with a retail value of \$304.2 million. This includes aerosol duster products typically sold through traditional consumer retail chains such as Walmart and Office Depot, and online through Amazon (47% of aerosol dusters), and those products typically intended for professional use that are sold directly by manufacturers or through professional distributors such as Grainger and Uline (53% of aerosol dusters).

This work will assist CPSC staff to assess the aerosol duster market. By fully researching this market, CPSC staff is prepared for more comprehensive analysis of this market pending action of the Commission on the aerosol duster petition.

¹ CPSC staff prepared this statement, and the attached report was prepared by Euromonitor Consulting for CPSC staff. This statement and report have not been reviewed or approved by, and do not necessarily represent the views of, the Commission.

² [Petition-from-Families-United-Against-Inhalant-Abuse-FUAIIA.pdf \(cpsc.gov\)](#)



Aerosol Duster Study: Final Report

A custom report compiled by Euromonitor International for the U.S. Consumer Product Safety Commission (CPSC)

July 2023

www.Euromonitor International.com

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Table of Contents

1.	EXECUTIVE SUMMARY AND KEY FINDINGS	5
2.	INTRODUCTION AND PROJECT OBJECTIVES	6
3.	DEFINITIONS	7
3.1	Aerosol Pressurized Products	7
3.2	Aerosol Dusters	7
3.3	Consumer Aerosol Dusters	7
3.4	Commercial/Industrial Aerosol Dusters	7
4.	METHODOLOGY	9
5.	IDENTIFICATION OF KEY CHARACTERISTICS OF AEROSOL DUSTERS	12
5.1	Blown Gas Spray Function for Dusting	12
5.2	Canisters and Nozzles	13
5.3	Propellant	14
5.4	Estimated Product Life for Aerosol Duster Products	15
5.5	Changes to Aerosol Dusters and Product Innovations over the Last 10 Years	15
6.	U.S. AEROSOL DUSTER MARKET	17
6.1	Aerosol Duster Market for Household Consumer Products	18
6.2	Retail Price of Aerosol Duster Products	19
6.3	Multi-packs and Incentive Pricing	22
6.4	Product Availability	23
6.5	Online Vs. In-store	24
7.	SUPPLIER ANALYSIS	26
7.1	Supply Impacts	27
8.	MARKET SEGMENTATION	30

8.1	Aerosol Dusters are Segmented for Consumer Use and for Commercial Use	30
8.2	Aerosol Dusters Described as “Air”	32
9.	WARNING LABELS AND SAFETY MEASURES	35
9.1	Online Warnings	35
9.2	On-product Warnings.....	35
9.3	Manufacturer Efforts	38
9.4	Retailer Efforts.....	38
9.5	Aerosol Dusters with Bitterant	39
10.	PRODUCT ALTERNATIVES	41
11.	FINAL SUMMARY AND CONCLUSIONS	45
12.	SOURCE LIST	47
13.	APPENDICES	1
13.1	Appendix A: U.S. EPA Substitutes in Aerosol Propellants	1
13.2	Appendix B: Expert Interview Discussion Guide.....	4
13.2.1	Introduction	4
13.2.2	Market Characteristics.....	4
13.2.3	Product Characteristics.....	6
13.2.4	Promotional Activities.....	6
13.3	Appendix C: Euromonitor International’s Approach to Aerosol Duster Market Sizing	8

EXECUTIVE SUMMARY AND KEY FINDINGS

The 2022 U.S. aerosol duster market was estimated to be 29.9 million units with a retail value of \$304.2 million. This estimate includes aerosol duster products typically sold through traditional consumer retail chains such as Walmart and Office Depot, and online through Amazon (47% of aerosol dusters), and those products typically intended for professional use that are sold directly by manufacturers or through professional distributors such as Grainger and Uline (53% of aerosol dusters).

The term “Air” was observed on some aerosol duster product labels, while “Air” was frequently used in product descriptions both in-store and online.

Approximately 12% of the aerosol dusters examined during this study were labeled as "air" on the product label itself, while nearly half (48%) used "air" in their online product descriptions. The availability of bitterant-containing products online was estimated to be around 70% of all aerosol dusters, with an even higher percentage of 75.5% for products utilizing HFC-152a (difluoroethane or DFE) propellant. Information on the specific type and concentration of bitterants was not disclosed in product descriptions or safety data sheets. About half of the products observed through the research included warnings against inhalation abuse, or mentioned the presence of a bitterant or bittering agent.

Nearly half of aerosol duster suppliers are considered small U.S. businesses.

There are approximately 40 suppliers of aerosol duster products, of which at least 18 are small U.S. businesses, including both U.S.-based manufactures and U.S. wholesale distributors of products manufactured by other countries. Falcon Safety Products, owner of Dust-Off, is the leading manufacturer of aerosol dusters in the United States. Contract manufacturing and private labeling are very common for aerosol dusters, with private label products thought to represent anywhere from 25% to 40% of the aerosol duster category.

Aerosol duster products are widely available and accessible to consumers, as are product alternatives.

Aerosol dusters are easily found and purchased through both brick-and-mortar and online retail channels. The most common option for consumers, in terms of product size, price, and propellant type, is a 10 ounce (oz) can of \$10 difluoroethane (DFE) aerosol duster. Handheld electric compressed air duster blower devices were identified as potential alternatives, and while they are not exact substitutes for aerosol dusters, they can perform many of the same functions as an aerosol duster (e.g., cleaning and removing dust, dirt, debris, and other unwanted particles from sensitive or hard-to-reach surfaces and equipment). Other specialty gas dusters using carbon dioxide and nitrogen were also identified in limited distribution.

INTRODUCTION AND PROJECT OBJECTIVES

The Consumer Product Safety Commission (CPSC) is an independent Federal agency that protects the public against unreasonable risk of injury or death from consumer products. CPSC “works to save lives and keep families safe by reducing the risk of injuries and deaths associated with consumer products” by:

- Issuing and enforcing mandatory standards;
- Obtaining the recall of products and arranging for a repair, replacement, or refund for recalled products;
- Researching potential product hazards;
- Developing voluntary industry standards;
- Informing and educating consumers; and
- Educating manufacturers worldwide.

The objective of the Aerosol Duster Market contract is to develop and update key market data to create an Aerosol Duster Market Analysis. The objective of the Aerosol Duster Market Analysis is to identify the characteristics of the U.S. market for aerosol dusters in detail³.

The Aerosol Duster Market Analysis will help answer existing questions related to this market and will inform future decision-making by CPSC. The Analysis will answer questions posed by decision-makers related to the Staff Briefing Package, confirm, and/or weaken assertions made related to the petition, and expand and update CPSC’s understanding of the market for aerosol dusters.

About Euromonitor International

Euromonitor International is a leading provider of independent market research with over 40 years of experience. Euromonitor International has sixteen global offices and operates a network of in-country analysts spanning 100 countries. Through more than 8,000 research projects, Euromonitor International has become known and trusted for its reliable data and insights, including those spanning its statistical and custom research services. By bridging research methodologies based on on-the-ground research and data science, Euromonitor International helps organizations understand markets and support public policy discussions.

³ The Aerosol Duster Market Analysis consists of a final report and supporting database files. Although the report is primarily intended for internal use by CPSC, the report and supporting database files may be made available to the public.

DEFINITIONS

1.1 AEROSOL PRESSURIZED PRODUCTS

Aerosol products are self-contained pressurized units, primarily of steel or aluminum, that dispense materials in the form of foams, fine mists, and sprays. Used across a variety of product categories, aerosol products can be found in household products, personal care products, food products, automotive products, industrial products, lubricants, paints, finishes, insect sprays, animal products, and others. According to the Household & Commercial Products Association (HCPA) there were more than 3.75 billion aerosol products filled in the United States in 2020.⁴

1.2 AEROSOL DUSTERS

Aerosol dusters, also known as canned air, compressed air, and compressed gas, are pressurized containers filled with liquefied gas propellants. They are specifically designed for cleaning and removing dust, dirt, debris, and other unwanted particles from sensitive or hard-to-reach surfaces and equipment. Aerosol dusters utilize the force of compressed gas, released through a nozzle or straw attachment, to create a directed stream of gas that dislodges and blows away contaminants without causing damage or leaving residue. These products are used in various applications including electronics, computer maintenance, photography, automotive, and general household cleaning tasks that require a convenient and efficient method of forced-air-blown cleaning.

1.3 CONSUMER AEROSOL DUSTERS

Consumer aerosol dusters provide the benefits of aerosol dusters and are designed for distribution to consumers. Consumer products are normally purchased by individuals for personal use at retail stores such as Walmart, and online through retailers such as Amazon. Consumer aerosol dusters typically use HFC-152a (difluoroethane or DFE) propellant and present marketing messages, graphics, and images typical of retail products. Although intended for consumer use, consumer aerosol dusters are accessible through retail channels for commercial/industrial users who choose to use them.

1.4 COMMERCIAL/INDUSTRIAL AEROSOL DUSTERS

Commercial/industrial aerosol dusters provide the benefits of aerosol dusters, and are designed for distribution to professional users. Commercial/industrial products are those normally purchased by businesses for professional use directly from manufacturers, or through industrial suppliers and distributors such as Grainger. While consumer aerosol dusters typically use DFE (difluoroethane) propellant, which is flammable and less expensive, commercial/industrial aerosol dusters often use HFC-134a (tetrafluoroethane) or HFO-1234ze (tetrafluoropropene) propellants which are nonflammable and more expensive. While commercial/industrial aerosol

⁴ 2020 Aerosol Pressurized Products Survey, Household & Commercial Products Association (2021)

dusters also use DFE (difluoroethane), this propellant may also be blended with nonflammable propellants to provide characteristics that are suitable for commercial/industrial user requirements. Although intended for commercial/industrial use, commercial/industrial aerosol dusters are accessible to consumers who choose to use them via industrial suppliers and distributors.

METHODOLOGY

Euromonitor International (EMI or Euromonitor) followed a collection framework to build datasets summarizing the full landscape of the U.S. market for aerosol dusters. Given the limited size of the aerosol duster market and fragmented retailer landscape for this product category, EMI utilized a multi-method approach to collect and organize aerosol duster data and market information.

Euromonitor International used five steps to address the research objectives: (1) secondary research, (2) in-person store audits, (3) manual web-scraping, (4) expert interviews, and (5) data organization and validation. These steps collectively examined a variety of sources for data, insights, and market estimates to document the product landscape for aerosol dusters. In addition, the methodology used for this project effectively generates a market consensus on key product information and a reliable list of leading suppliers, distributors, and retailers of aerosol dusters. The research steps that were followed serve as the framework to create a robust dataset, which can be updated in the future.

Secondary Research

Detailed methodology: Euromonitor International collated publicly available sources with information relevant to aerosol dusters and the aerosol duster supply chain. Secondary sources were used to inform, interpret, validate, and support primary research through in-person store audits, web-scraping, and expert interviews.

Strengths and limitations of the data collected: Secondary data collection is limited to publicly available information; EMI did not purchase reports from secondary sources, but rather reviewed published content available from these reports. Such sources can vary in reliability and ability to verify the data collection process and potential biases in the original sources. Secondary sources are weighed based on reliability of the source.

In-person Store Audits

Detailed methodology: Twenty in-person store audits were conducted to collect and document information on aerosol duster product. Stores were chosen based on their local popularity with consumers and their ability to represent important retail segments. For example, Hypermarket retailers were Walmart and Target; Office Supply was Staples; the Club channel was Costco; Discounters were Big Lots, Dollar General, and Dollar Tree; Drugstores were CVS and Walgreens; Electronics was Best Buy; Home Improvement was Home Depot and Lowe's; Home Goods was Bed Bath & Beyond; and Auto Parts was O'Reilly Auto Parts. Walmart, Target, Staples, Best Buy, Lowe's, and Walgreens were physically visited in different areas of the country, as well. Analysts collected data on available products primarily in Connecticut (9 stores) and New York (5 stores), with supplemental visits in Vermont (2 stores), Maryland (2 stores), Illinois (1 store), and Texas (1 store). Analysts also engaged in brief discussions with retail managers and sales associates to understand 1) display practices, 2) customer purchasing

trends, 3) retailer policy towards sales of aerosol dusters, e.g., age verification, and 4) trends in product development such as new or phased-out features.

Strengths and limitations of the data collected: In-person store audits provide detailed insights on product and brand availability as well as insights regarding product attributes and price. In-store interviews helped validate top players and frequency of sales. In-person store audits are limited to the sample of selected retailers and geographic locations, while store personnel have varied levels of knowledge and experience regarding aerosol dusters, so these results cannot guarantee an exhaustive list of products or definitive understanding of user habits and practices.

Manual Web-scraping

Detailed methodology: Euromonitor International Research analysts manually visited retailer websites of 33 retailers to document each aerosol duster product SKU and electric duster product substitutes to gather product information. The composition of websites scraped was:

- 6 non-store retailers (e.g., Amazon)
- 26 omnichannel retailers (e.g., Walmart, Staples, Home Depot)
- 1 delivery service (Instacart).

Additionally, manual web-scraping was conducted in 54 Walmart, Target, and Office Depot/Max stores across the United States in markets selected by Euromonitor International and CPSC based on population density and high rates of reported illicit drug use.⁵

The websites of aerosol duster suppliers were also scraped to identify aerosol duster products and to gather product information.

Strengths and limitations of the data collected: Manual web-scraping provided detailed insights on product and brand availability as well as insights regarding product attributes, and purchase restrictions, e.g., age verification, and price. Additionally, utilizing geographic filters and using websites to filter by "buy online" or "in store pick up" allows some insight into geographic differences in terms of product and brand offerings. Web-scraping does not offer details on share of shelf or where these products are in store, such as which aisles or shelves, or if there is controlled access, either locked or kept behind a counter.

⁵ Sources: Most populated US cities, Euromonitor International research (<https://worldpopulationreview.com/>); Highest Drug Use by City, American Addiction Centers (<https://americanaddictioncenters.org/>); 7 US Cities with the Worst Drug Problems, Scottsdale Recovery (<https://scottsdalerecovery.com/>); 10 Cities with Worst Drug Problems, Monarch Shores (<https://monarchshores.com/>)

Expert and Trade Interviews

Detailed methodology: Euromonitor International conducted nine expert and trade interviews to gain deeper knowledge on the aerosol duster market. Key topics covered during interviews included: product availability through commercial vs. consumer channels; comparison of regulations and warning for products in commercial vs. consumer channels; the evolution of product features; key and emerging aerosol duster anti-huffing features; inputs and reactions to market sizing model; inputs and reactions to brand share rankings; and understanding key differences between commercial and consumer products and distribution channels.

Euromonitor International conducted interviews in person or via phone/video call with contacts throughout the supply chain. For this study, trade interviews focused on suppliers, distributors (for consumer and commercial channels), and retailers to understand their perspective on the historic, present, and future state of the aerosol duster market.

Strengths and limitations of the data collected: Expert and trade interviews are a central research input for most market sizing and market landscaping studies; however, due to limitations posed by the Paperwork Reduction Act⁶, for this report, the number of trade interviews conducted was limited to nine. While expert and trade interviews as a research methodology can be useful in accessing specialized knowledge, generating rich qualitative data and offering flexibility in the interview process, they were particularly difficult to source for this industry, as players understand that their product may be subject to regulation and were reluctant to speak with EMI. Limitations of this data collection method include limited sample size, potential bias, and subjectivity in the data, challenges in accessing experts, and dependence on individual expertise. Despite these limitations, Euromonitor International has provided relevant quotes from interviews where possible, and anonymized descriptions of the interview subject.

⁶ The Paperwork Reduction Act is a law governing how federal agencies collect information from the public (<https://pra.digital.gov/>).

IDENTIFICATION OF KEY CHARACTERISTICS OF AEROSOL DUSTERS

This section discusses the different types of characteristics and attributes of aerosol duster products. Aerosol dusters are available in a variety of different canister sizes and nozzle designs to cater to different end-users and cleaning needs (household vs. professional). For household consumers, the predominant size is the 10-oz canister, accounting for approximately 68% of retail aerosol dusters. The prevalence of environmentally friendly propellants such as DFE (difluoroethane) and HFO-1234ze (tetrafluoropropene) suggests the industry's efforts to align with environmental regulations and consumer preferences. The estimated product life of aerosol dusters suggests that while they can remain functional for an extended period, the spray intensity may gradually diminish after approximately 10 years. Despite no significant changes in the past decade, past innovations focused on propellants have improved their environmental impact. Some products still use the term "Air" on their canisters, indicating a legacy labeling practice.

1.5 BLOWN GAS SPRAY FUNCTION FOR DUSTING

Below depicts the primary intended uses for both household and commercial/industrial consumers with overlapping usage in keyboard dusting, laptop, and desktop cleaning, etc. ⁷

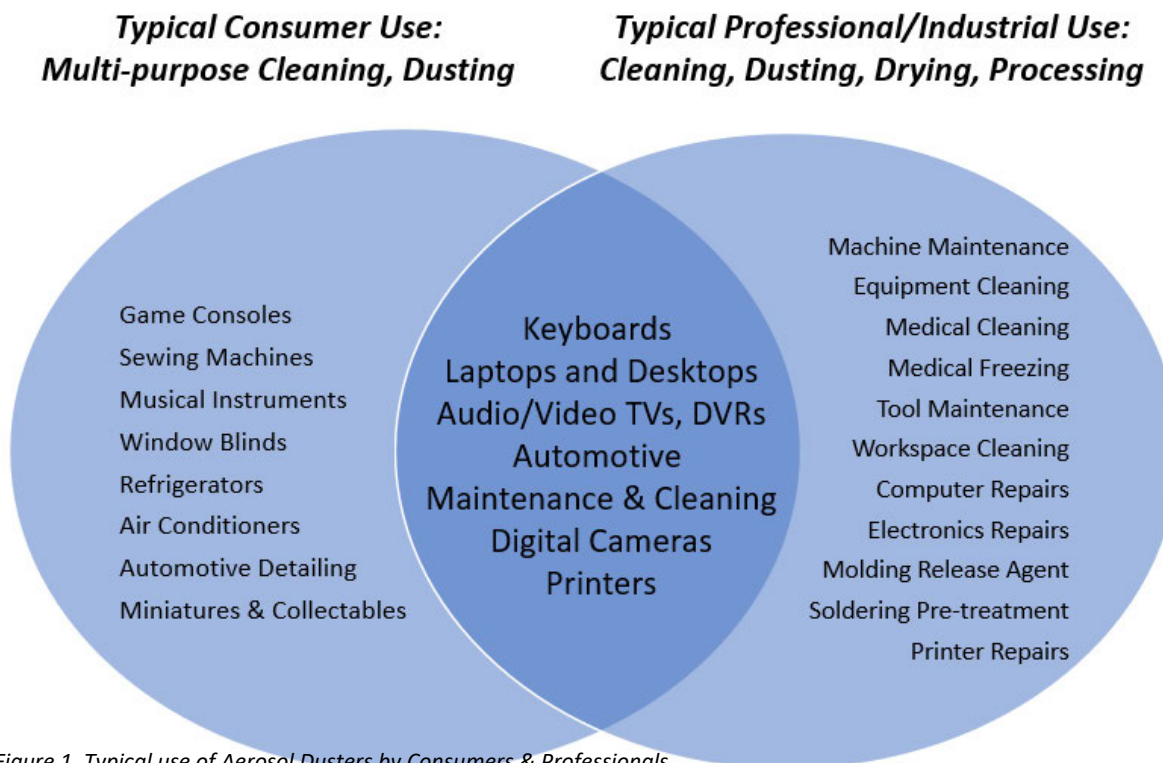


Figure 1. Typical use of Aerosol Dusters by Consumers & Professionals

⁷ Diagram generated by Euromonitor International based on information from web-scraping, June 2023

1.6 CANISTERS AND NOZZLES

Aerosol duster products are commonly packaged in two types of canisters, steel and aluminum, and feature a variety of nozzle designs, each serving a specific purpose. Visual representations of different nozzle types highlight their diversity, as pictured below in Figure 2.⁸ These include pinpoint nozzles for precision cleaning, fan-shaped nozzles for broader coverage, and straw attachments for reaching tight spaces, each commonly available for both consumer and commercial/industrial use. More premium and durable nozzles, such as the chrome polished nozzle shown on the right, are targeted to commercial/industrial users. The availability of multiple nozzle options caters to diverse cleaning requirements and enhances user convenience.



Figure 2. Variety of commercially available Aerosol Duster Spray Nozzles.

Analysis of the aerosol dusters observed during store audits reveals these products are available to consumers in a variety of sizes, with a total of nine different canister sizes identified, ranging from 2 oz to 17 oz. Among these, three primary sizes were most observed in retail products. **The predominant size is the 10-oz canister, accounting for approximately 68% of retail aerosol dusters** observed through store audits and manual web-scraping. The 8-oz and 3.5-oz canisters comprised approximately 9% each of products observed, respectively.

Table 1: Canister Size of Retail Aerosol Duster Products N=243

Product Volume	Count	Share of Total (%)
2 oz	1	0.4%
3.5 oz	22	9.1%
7 oz	9	3.7%
8 oz	23	9.5%
10 oz	164	67.5%

⁸ Image generated by Euromonitor International based on images drawn from web-scraping, June 2023

12 oz	14	5.8%
15 oz	1	0.4%
16 oz	2	0.8%
17 oz	7	2.9%

1.7 PROPELLANT

The most common propellant identified is HFC-152a (difluoroethane or DFE) and was observed in approximately 87% of retail products. HFC-152a stands for hydrofluorocarbon-152a and is a propellant that replaced CFC12, which was used as a propellant in aerosol dusters, but has been phased out due to its ozone-depleting properties. This propellant offers favorable environmental characteristics, and has become widely adopted within the industry.

HFC-134a (tetrafluoroethane), another propellant, is present in approximately 11% of retail aerosol dusters. A newer propellant, HFO-1234ze (tetrafluoropropene), refers to hydrofluoroolefin-1234ze, a non-flammable propellant introduced as a potential replacement for HFC-134a (tetrafluoroethane). It offers improved Global Warming Potential (GWP) and is expected to reduce the product’s environmental impact. HFO-1234ze (tetrafluoropropene) was observed in approximately 1% of retail aerosol duster products. Additionally, a non-flammable blend of difluoroethane and tetrafluoroethane was observed in around 1% of retail products, catering to specific needs where flammability is a concern. The inclusion of these propellants in retail aerosol dusters highlights the industry's efforts to provide a range of choices that align with environmental regulations and consumer preferences.

Table 2: Propellant Type Observed in Retail Aerosol Duster Products (%) N=243

Propellant Type (%)	Difluoroethane	Tetrafluoroethane	Tetrafluoropropene	HFC-152a/HFC-134a (non-flammable blends)
<i>Consumer</i>	95%	3%	1%	1%
<i>Commercial/Professional</i>	42%	55%	3%	n/a
Aerosol Dusters	87%	11%	1%	1%

1.8 ESTIMATED PRODUCT LIFE FOR AEROSOL DUSTER PRODUCTS

The warranty periods for aerosol dusters typically span from 12 months to 5 years, safeguarding against defects in materials and workmanship. Several experts suggested that the actual shelf life is more than 5 years and up to 10 years, including two experts who believed that undamaged aerosol duster products could have an indefinite shelf life, meaning they could be stored and remain functional for even longer. However, one of these observed that after approximately 10 years a decline in blown gas spray intensity may occur. This suggests that while the product may still be usable beyond this time, its performance, specifically in terms of spray intensity, may gradually diminish.

These insights highlight the value of considering both the warranty periods offered by manufacturers against defects and their potential usefulness beyond these warranty periods. While warranties provide a certain level of protection, performance degradation may occur over a longer period, especially concerning the intensity of the blown gas spray.

“We have a lifetime warranty on all our products, but the shelf life of duster is said to be five years. However, it really will not go bad if it is not damaged.”

-Marketing Manager, Aerosol Duster Manufacturer

1.9 CHANGES TO AEROSOL DUSTERS AND PRODUCT INNOVATIONS OVER THE LAST 10 YEARS

All experts interviewed noted no significant changes in aerosol duster products had occurred over the past 10 years. Past innovations, primarily focused on propellants, were introduced several years ago, and are currently being implemented as required.

Changes to the aerosol propellants used in dusters were initiated well before 2013. For instance, the elimination of ozone-depleting CFC12 began in 1990, while the widely used HFC-152a (hydrofluorocarbon-152a) propellant with improved Global Warming Potential (GWP) was introduced in 1993. Bitterant was incorporated into aerosol duster products starting in 2006. Moreover, the non-flammable HFO-1234ze (hydrofluoroolefin-1234ze) propellant, expected to replace HFC-134a (tetrafluoroethane) with an improved GWP, was introduced in 2011.

While some members of industry have shifted practices away from using the term "Air" on aerosol duster canisters, Euromonitor International identified several products that use the term "Air" on the product canister; an example is included below. **The term "Air" was observed on 12% of aerosol duster product canisters collected through store audits and web-scraping.** Additional product details for aerosol dusters that use the term "Air" on the product canisters are available in the Aerosol Duster Database compiled by Euromonitor International.

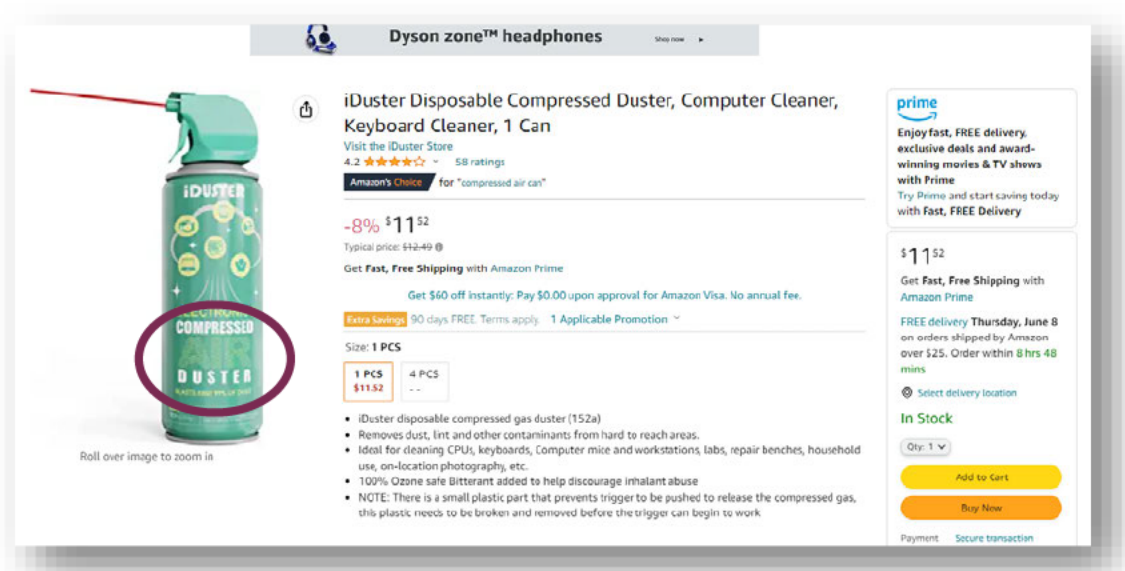


Figure 3. Image of commercially available aerosol duster product using the term "Air" on the canister, June 2023 (<https://amazon.com/>)

U.S. AEROSOL DUSTER MARKET

This section provides key market estimates for the U.S. aerosol dusters market and supporting analysis of the market size in units and value, sizes and pricing, and total retail sales.

Euromonitor International estimates the total commercial and consumer aerosol duster market in the United States in 2022 to be **29.9 million units at a retail value of \$304.2 million with an overall average price per can of \$10.19.**⁹

Industry members interviewed for this project have observed an increase in aerosol duster sales in the last three years, attributed to the growth of employees working from home since the COVID-19 pandemic. Workers who would have formerly obtained work-related aerosol duster products at their place of employment have opted to purchase their own aerosol duster products for use at home. While one aerosol duster product would typically have addressed the requirements of several workers in the workplace, these

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We've had to increase pricing due to inflation by about 60% over the past 7 months. Costs driven by freight, corrugated, propellant, steel, all our prices have gone up tremendously.

Retail prices have gone up too, could be as high as 50% to 70% depending on the store.

-VP Sales, Aerosol Duster
Manufacturer

”

consumers now purchase their own aerosol dusters to achieve the same blown gas cleaning benefit. Based on feedback from industry players, there is likely a stock of partially used aerosol dusters in homes that will take time to deplete. This may be a temporary increase in unit sales beyond normal category growth, and whether sales will return to pre-pandemic levels as people return to work, or if new consumption habits have been established, remains to be seen.¹⁰

“

Over the last 10 years it's been growing, but in the last 3 years it's exploded.

People working from home because of COVID are a driver. Previously, in the typical office, you'd have one person buying it using it on 10 plus different machines, but when you're working from home, you sell eight of them instead of just one.

-VP Sales, Aerosol Duster
Manufacturer

”

⁹ Secondary sources typically report the category value in terms of manufacturer selling prices (MSP), aka, producer prices. These sources do not typically include the value of retailer and distributor supply-chain mark-ups applied to the final end-user price unless specifically stated, aka consumer prices.

¹⁰ Additional research would be needed to provide more comprehensive insights into other possible drivers for the aerosol duster market, such as inhalation abuse, that were not covered as part of scope for this study.

EMI estimates the unit price of aerosol dusters ranges from an average of \$8.37/canister for DFE (difluoroethane) products, the most popular propellant for products sold in-store, to \$9.67/canister for products sold online, and \$15.85/canister for DFE (difluoroethane) dusters sold through commercial/industrial channels, as referenced in Table 6 below.

Also seen in Tables 7 and 8 below, the use of HFC-134a (tetrafluoroethene) and HFO-1234ze (tetrafluoropropene) propellants which are premium non-flammable alternatives, and the availability of premium nozzles and kits across the commercial/industrial channel, results in higher average unit prices.

Rising production costs and supply chain disruptions have also impacted manufacturers and suppliers of aerosol dusters products. While one expert interviewee claimed dramatic price increases of 50% to 70%, prices for non-durable goods (minus food and apparel) increased 26.2% from June 2021 to June 2022 according to the U.S. Consumer Price Index.¹¹

1.10 AEROSOL DUSTER MARKET FOR HOUSEHOLD CONSUMER PRODUCTS

The total share of the aerosol duster market is allocated to household consumers was estimated to be 33% of the total aerosol duster market in volume terms, reaching 9.8 million units and \$99.7 million in value sales.

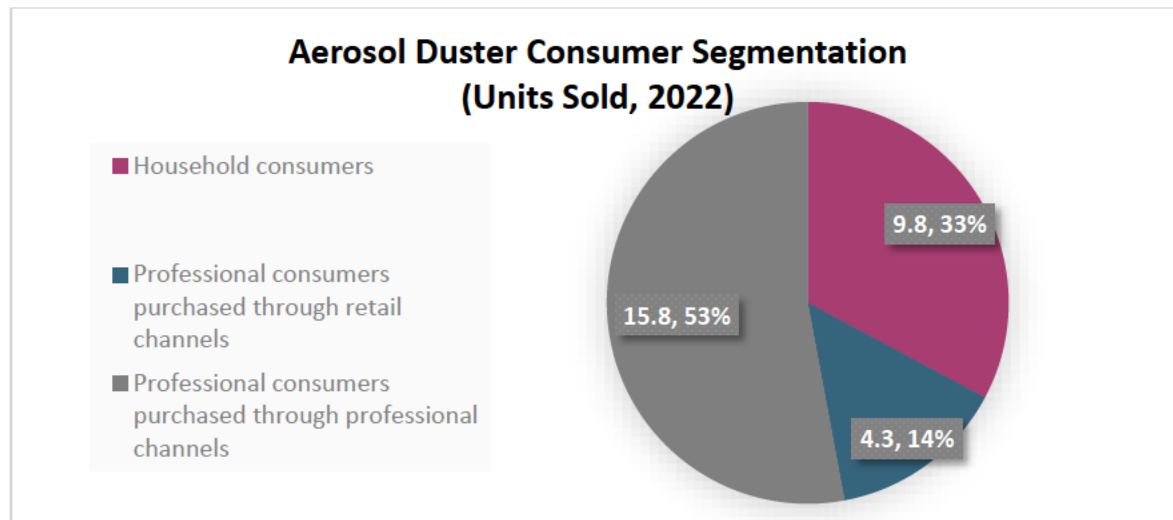


Figure 4

Of the remaining 20.1 million units estimated for commercial/industrial use, it is further estimated that 21%, or 4.3 million of these aerosol duster products, were obtained through consumer retail outlets. This brings the **total consumer retail market volume of aerosol dusters to 14.1 million units valued at \$143.4 million in 2022**, representing 47% of total

¹¹ Consumer product categories that are prone to price increases and decreases are now experiencing deflation in 2023. (<https://www.bls.gov/cpi/>)

aerosol duster sales. These professional users include small businesses, such as repair shops, housecleaners, tailors, woodworkers, etc., and those professionals working from home since the start of the COVID-19 pandemic who use aerosol dusters as part of their work routines (see Table 3).

Table 3: Estimated Annual Aerosol Duster Market Size

Aerosol Dusters	Units sold (million)	Value sold US\$ (million)
Consumer Use	14.1	\$143.4
<i>Household Consumers</i>	9.8	\$99.7
<i>Purchased by Professional Consumers through retail channels</i>	4.3	\$43.7
Industrial and Commercial Use (Purchased by Professional Consumers through professional channels)	15.8	\$160.8
Total Aerosol Dusters	29.9	\$304.2

1.11 RETAIL PRICE OF AEROSOL DUSTER PRODUCTS

The average price per canister for all products, regardless of intended use as consumer or commercial/industrial, propellant, or distribution channel, was \$12.02, as shown in Table 4.

Table 4: Average Price of Retail Aerosol Duster Products N=232

Product Volume	Count	Average Price per Canister	Average Price per Ounce
2 oz	1	\$1.25	\$0.63
3.5 oz	20	\$10.64	\$3.04
7 oz	9	\$8.75	\$1.25
8 oz	21	\$14.50	\$1.81
10 oz	160	\$11.60	\$1.16

12 oz	11	\$10.48	\$0.87
15 oz	1	\$39.63	\$2.64
16 oz	2	\$20.18	\$1.26
17 oz	7	\$21.11	\$1.24
Total	240	\$12.02	\$1.37

Of more relevance is a closer review of pricing differences between propellant types, and online, store-based, and industrial suppliers across the most popular sizes and propellants. While the type of propellant has an impact on price, with HFC-152a (difluoroethane) aerosol dusters the most economical at \$1.19/oz overall, other factors also influence the product price (see Tables 5 through 8).

The overall average price of an aerosol duster that uses HFC-152a (difluoroethane) was \$10.72, while the overall average price of an aerosol duster that uses HFC-134a (difluoroethane) was \$27.64. Meanwhile, the cost of a 3.5-oz canister of HFC-152a (difluoroethane) aerosol duster sold online or in-store was greater than a 10-oz canister of HFC-152a (difluoroethane) aerosol duster on average through the same channels despite containing less propellant. Therefore, the cost of the canister, the nozzle, the cost of marketing and supplying the aerosol duster, as well as other factors also impact the product price.

Table 5: Average Retail Price Per Ounce of Aerosol Dusters by Propellant Type

Average \$/oz	Online	Store-based	Supplier	All Channels
HFC-152a (difluoroethane)	\$1.13	\$1.02	\$1.71	\$1.19
HFC-134a (tetrafluoroethene)	\$3.18	n/a	\$2.75	\$2.94
HFO-1234ze (tetrafluoropropene)	\$4.02	\$2.30	\$3.71	\$3.49

*n=240, supplier channel includes commercial/industrial features, special nozzles, and kits

Table 6: Average Retail Price of Aerosol Dusters Using HFC-152a (Difluoroethane) Propellant

HFC-152a*	10oz	8oz	3.5oz	All Sizes
-----------	------	-----	-------	-----------

Online	\$9.01	\$10.72	\$10.92	\$9.67
Store-based	\$8.36	\$7.26	\$10.74	\$8.37
Supplier	\$16.72	n/a	\$9.99	\$15.85
All Outlets	\$9.97	\$9.19	\$10.83	\$10.72

*n=188, supplier channel includes commercial/industrial features, special nozzles, and kits

Table 7: Average Retail Price of Aerosol Dusters Using HFC-134a (Tetrafluoroethene) Propellant

HFC-134a*	10oz	8oz	3.5oz	All Sizes
Online	\$33.64	\$26.02	\$13.19	\$31.67
Store-based	n/a	n/a	n/a	n/a
Supplier	\$24.46	\$30.56	\$19.99	\$24.57
All Outlets	\$28.87	\$29.55	\$16.59	\$27.64

*n=47

Table 8: Average Retail Price of Aerosol Dusters Using HFC-152a/HFC-134a Propellant Blends

HFO-1234ze& HFC-152a/HFC- 134a blend*	10oz	8oz	3.5oz	All Sizes
Online	\$40.19	n/a	\$10.49	\$25.34
Store-based	\$22.98	n/a	n/a	\$22.98
Supplier	\$20.27	n/a	n/a	\$22.36
All Outlets	\$24.80	n/a	\$10.49	\$23.28

*n=8

Retail stores typically offer only one brand of aerosol duster, often a store-brand private label duster, which results in slightly lower prices in brick-and-mortar stores compared to the broader range of commercial and industrial products available through online retailing that are typically more expensive.

Some industrial suppliers also offer special nozzles and kits that impact the price per canister. This is especially evident for 10-oz HFC-152a (difluoroethane) aerosol dusters. For example, the Chemtronics Ultra Jet System with chrome trigger valve, priced at \$96.27 for a 10-oz can. (See Figure 5.) Aerosol dusters of this design are intended for industrial or commercial use.



1.12 MULTI-PACKS AND INCENTIVE PRICING

Single canister (1-pack) products were the most commonly available and the most expensive option for aerosol dusters. Multi-packs from 2 to 12 cans each were also available. 2-packs, followed by 6-packs, were the most seen, with the average price/oz improving the overall value from \$1.84/oz for a single canister to \$0.99/oz for 2-packs and \$0.92/oz for 6-packs.

Table 9: Average Retail Price of Aerosol Dusters Based on Pack Size (All Configurations Included)

Pack Type	Count	Average \$/canister	Average \$/oz
1-Pack	116	\$15.90	\$1.84
2-Pack	52	\$9.30	\$0.99
3-Pack	11	\$7.79	\$0.95
4-Pack	13	\$6.40	\$0.64
5-Pack	1	\$10.99	\$1.09
6-Pack	23	\$7.49	\$0.92
12-Pack	16	\$7.15	\$0.82
Total	240	\$12.02	\$1.37

*n=240

Special value clearance pricing was also noted from BJ’s online featuring deeply discounted products available for \$1.67 per 10 oz canister (\$0.17/oz). At the time of store audits, this product was sold out.

1.13 PRODUCT AVAILABILITY

Aerosol dusters were found to be available to consumers through an extensive list of online and brick-and-mortar retailers, including grocery stores, pharmacies, wholesale clubs, hypermarkets, office specialists, hardware specialists, and electronic specialists. Aerosol dusters were seen to be both easy to access and widely available through the process of in-person store audits and manual web-scraping.

Larger Canisters and Larger Pack sizes deliver better Value. Pricing averaged \$13.57/canister (\$1.53/oz.)

Super Clearance Sale: \$19.98

12-Pack of 10oz cans on clearance at BJ’s is **Sold Out.**
 >> \$1.67/canister (\$0.17/oz)

© Euromonitor International

Figure 6

Table 10: Retailers with Aerosol Duster Products Found in Store Audits in Web-scraping

Grocery	Pharmacy	Warehouse Club	Hypermarket	Office Specialists	Hardware Specialists	Electronic Specialists	E-Commerce	Others
Kroger, Fred Meyer, Harris Teeter, Wegmans, Shop Rite	CVS, Walgreens	Costco, Sam’s Club, BJ’s	Walmart, Target, Meijer	Office Max/Depot, Staples	Home Depot, Lowes, Ace Hardware, Menards	Best Buy	Amazon, Grainger, WB Mason, Newegg, Kimball West, Uline	Big Lots, Dollar General, Dollar Tree, O’Reilly Auto Parts

Euromonitor International also reviewed the local availability of aerosol duster products across 54 Walmart, Target, and Office Depot/Max stores in 18 U.S. cities through zip code analysis and manual web-scraping. These cities were selected based on high populations or relative incidence of illicit drug use.¹² These cities were: Baltimore, MD; Chicago, IL; Dallas, TX; Dayton, OH; Detroit, MI; Espanola, NM; Houston, TX; Indianapolis, IN; Las Vegas, NV; Los Angeles, CA;

¹² Sources: Most populated US cities, Euromonitor International research; Highest Drug Use by City, American Addiction Centers (<https://americanaddictioncenters.org/>); 7 US Cities with the Worst Drug Problems, Scottsdale Recovery (<https://scottsdalerecovery.com/>); 10 Cities with Worst Drug Problems, Monarch Shores (<https://monarchshores.com/>)

Minneapolis, MN; New York, NY; Philadelphia, PA; Phoenix, AZ; San Antonio, TX; San Diego, CA; San Jose, CA; and Wichita, KS.

All cities carried a similar range of products with the following exceptions:

- San Diego, CA – no aerosol duster products available at Walmart; however, both Target and Office Depot/Max offered aerosol dusters.
- Los Angeles, CA – no aerosol duster products available at Target; however, both Walmart and Office Depot/Max offered aerosol dusters.

Although minor local variations in distribution were observed, aerosol duster products continued to be available to the public across all cities addressed.

1.14 ONLINE VS. IN-STORE

An estimated 33% of aerosol dusters were purchased by consumers online, vs. 67% purchased from in-store retailers.

Table 11: Estimated Aerosol Duster Market Size by Retail Channel

Aerosol Dusters	Units sold (million)	Channel Sales US\$ (million)	Retail Channel Share (%)
Online	4.58	\$59.3	\$12.93
In-store	9.52	\$84.2	\$8.84

Based on the relative availability of products identified through manual web-scraping and inputs from expert interviews, the following is a relative ranking of typical online retailers of consumer aerosol duster product sales, starting from the largest:

- | | |
|------------------------|----------------------|
| 1. Amazon.com | 13. Lowes.com |
| 2. Walmart.com | 14. Uline.com |
| 3. OfficeDepot.com | 15. Menards.com |
| 4. Grainger.com | 16. Bestbuy.com |
| 5. Staples.com | 17. BJs.com |
| 6. WBMason.com | 18. SamsClub.com |
| 7. Newegg.com | 19. HarrisTeeter.com |
| 8. HomeDepot.com | 20. Kroger.cm |
| 9. Target.com | 21. Walgreens.com |
| 10. KimballMidwest.com | 22. CVS.com |
| 11. BigLots.com | 23. Meijer.com |
| 12. AceHardware.com | 24. Costco.com |

- 25. FredMeyer.com
- 26. Shop.wegmans.com

- 27. OReillyAuto.com

Based on the relative availability of products identified through in-person store audits and manual web-scraping, supplemented with inputs from expert interviews, EMI found the following relative ranking of typical in-store retailers of consumer aerosol duster product sales, starting from the largest:

- | | |
|------------------------------|-------------------------|
| 1. Walmart | 11. BJ's |
| 2. Office Max/Depot, Staples | 12. Sam's Club |
| 3. Home Depot | 13. Harris Teeter |
| 4. Target | 14. Kroger |
| 5. Big Lots | 15. Walgreens |
| 6. Ace Hardware | 16. CVS |
| 7. Lowe's | 17. Meijer |
| 8. Menards | 18. Fred Meyer |
| 9. Best Buy | 19. Wegmans |
| 10. Costco | 20. O'Reilly Auto Parts |
| | 21. Dollar General |

Aerosol duster products were available for consumer purchase through a wide range of online and in-person retail stores. The accuracy of the relative rankings presented is limited by the small size of the aerosol duster category and the fragmented retail landscape for these products. Industry experts also asserted that while leading national retailers such as Walmart, Home Depot, and Office Max/Depot typically manage stock-keeping plans centrally and may limit the facing of aerosol duster products to just one brand and 1 to 4 SKUs, local store managers in categories such as grocery, pharmacy, and hardware can have more discretion over the local stock plans that influenced product availability. Notwithstanding these challenges, this ranking is presented on a best-effort basis in accordance with reviewing the available information.

SUPPLIER ANALYSIS

There are approximately 40 suppliers of aerosol duster products, of which 16 are considered small U.S.-based businesses with fewer than 75 employees, including both U.S.-based manufacturers and wholesale distributors of products manufactured in other countries. Note: CPSC staff provided a list of 20+ manufacturers of aerosol dusters to EMI in February 2023. EMI identified 26 key suppliers of aerosol dusters.

The following is the list of manufacturers/brands, importers, and distributors of aerosol duster products in the U.S. market:

Businesses with fewer than 50 employees

- ACL Staticide, Inc., Chicago, IL
- Albatross USA, Inc., Long Island City, NY
- Allsop, Inc., Bellingham, WA
- AVW Inc, dba Max Pro, Ft. Lauderdale, FL
- AW Distributing, Redwood City, CA
- CAIG Laboratories, Inc., Poway, CA
- NA Trading and Technology, Bloomington, MN
- Noble Chemical, Inc., Lancaster, PA
- NXT Technologies, Houston, TX
- PerfectData Corporation, Simi Valley, CA
- Stoner, Inc., Quarryville, PA
- Wechem Engineered Chemistries, Inc., Harahan, LA

Businesses with 51 to 75 employees

- ABC Compounding Co., Inc., Morrow, GA
- Falcon Safety Products, Inc., Branchburg, NJ
- MG Chemicals, Burlington, ON, Canada
- MicroCare Corporation, New Britain, CT

Businesses with 76 to 100 employees

- Aervoe Industries, Inc., Gardenville, NV
- Empack Straytech, Inc., Brampton, ON, Canada
- GC Electronics, Inc., Rockford, IL
- Norazza, Inc., Buffalo, NY

All others (more than 100 employees, and undetermined)

- Advantus Corporation, Jacksonville, FL
- AW Product Sales & Marketing, Inc., San Mateo, CA
- Belkin International, Inc., El Segundo, CA
- Chemtronics, an ITW Company, Kennesaw, GA
- CRC Industries Americas, Horsham, PA
- Fastenal Industrial Supply, Winona, MN
- Fellowes, Inc., Itasca, IL
- Hornady Manufacturing Inc., Grand Island, NE
- Ideal Industries, Inc., Sycamore, IL
- iDuster Cleaning Supplies, Unknown
- LHB Industries, St. Louis, MO
- Newark Electronics, Chicago, IL
- NTE Electronics, Inc., Bloomfield, NJ
- Office Supply, Inc., Atlanta, GA
- PLZ Corporation, Downers Grove, IL
- Quest Specialty Corporation, Brenham, TX
- SP Industries, Inc., Warminster, PA
- Techspray, an ITW Company, Kennesaw, GA
- Uline, Inc., Pleasant Prairie, WI
- VOXX Accessories Corporation, Indianapolis, IN
- Zep Inc., Emerson, GA

Based on the relative availability of products identified through in-person store audits and manual web-scraping, EMI assembled the following ranking of leading brands of aerosol dusters based on stock-keeping units (SKUs).

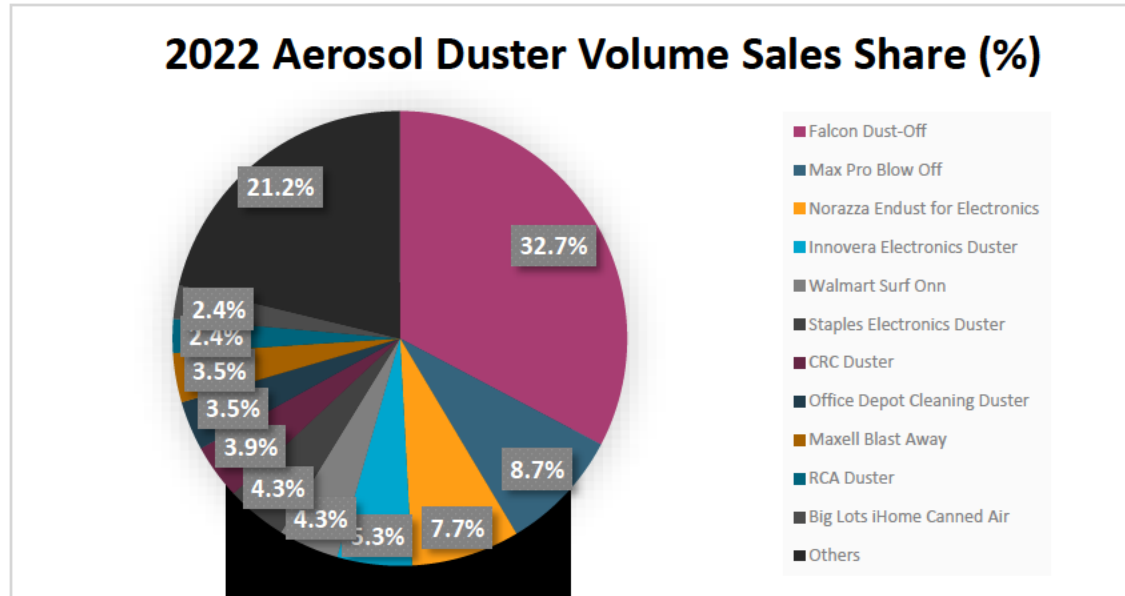


Figure 7 Note: Others includes those remaining suppliers with 2% or less of the observed SKUs.

Contract manufacturing and private labeling are common in aerosol duster manufacturing, with some interviewees expressing that **private label products are common among retailers, such as Walmart, Office Depot, Staples, Best Buy**). A leading aerosol duster manufacturer estimated that private label could be from 25% to 40% of the aerosol duster category. Leading companies such as Falcon Safety Products and Max Pro not only produce their own branded products, but also manufacture for other brands. Furthermore, store brands from companies such as Walmart and Staples that are major retailers of aerosol dusters also execute private label strategies with leading aerosol suppliers, including Falcon Safety Products.

Outside of office wholesalers, in-store retailers typically offer one or two duster lines in their product assortment, with a greater selection of product types available from their online stores. Walmart was cited as by manufacturers as one of the retailers to offer more than one duster line, for both electronics and office supply.

1.15 SUPPLY IMPACTS

Key trends Impacting Supply of Aerosol Dusters to U.S. Market Over Past 10 Years

The insights gathered from industry experts shed light on the regulatory initiatives and market dynamics impacting the supply and development of aerosol duster products. Overall, the key influences on the industry have been regulatory initiatives regarding the environmental impacts

of propellants (see below), market requirements, and external factors impacting propellant choices, bitterant adoption, and supply chain dynamics within the aerosol duster industry.

Environmental Regulations

In the United States, the Environmental Protection Agency's (EPA) SNAP (Significant New Alternatives Policy) plays a crucial role in governing the propellants used in aerosol products, including aerosol dusters. The policy considers environmental and health risks, including factors such as ozone depletion potential (ODP), global warming potential (GWP), toxicity, flammability, and exposure potential of propellants, favoring lower ODP and GWP numbers indicative of reduced environmental impact. As a result, certain propellants have been listed as acceptable or unacceptable (see Appendix A for additional detail on the United States EPA's SNAP for Aerosol Propellants.)

HCFC-22, with an ODP of 0.055 and GWP of 1,810, became unacceptable for use as a propellant as of September 18, 2015. Similarly, HFC-134a, (tetrafluoroethane) with a GWP of 1,430, became unacceptable as of July 20, 2016, except for specific applications and blend compositions utilizing HFC-134a which is non-flammable. In contrast, HFC-152a (difluoroethane), which is flammable and has a significantly lower GWP of 124, remains an acceptable propellant. The introduction of HFO-1234ze (tetrafluoropropene), which is also non-flammable and having a GWP of 6, expands the options for environmentally friendly propellants; however, it is more expensive.

The influence of these regulations on propellant selection is evident, highlighting the industry's efforts to meet both regulatory demands and consumer expectations. Interviewees emphasized that aerosol duster manufacturers have actively adopted propellants that align with regulatory restrictions, while still addressing consumer needs.

State Regulations

In addition to federal regulations, state requirements have influenced the propellant choices in aerosol products. These requirements aimed to limit consumer exposure to inhalants, defined as breathable chemical vapors or gases that produce mind-altering effects when inhaled. Such laws may also include restrictions that require purchasers be over 18 years of age. A summary published by the Connecticut General Assembly in 2009 listed 24 states with such laws.¹³ In 2017 National TASC (Treatment Accountability for Safer Communities) membership association

¹³ State Laws on Inhalant Use (Spiegel), July 8, 2009 (<https://cga.ct.gov/>); Families United Against Inhalant Abuse, April 2, 2021 Docket No. CP-21-1 (<https://regulations.gov/>); see also Air Duster Regulations, The Recovery Village, August 2, 2022 – 38 states have laws to restrict access (<https://therecoveryvillage.com/>)

listed details on 37 state restrictions and more recent claims suggest that up to 42 states have laws addressing inhalant abuse.^{14 15}

Inhalation Abuse

Bitterants, incorporated in aerosol duster products from as early as 2006,¹⁶ are intended to deter inhalation abuse. The use of bitterants in aerosol dusters represent industry's product effort to address consumer safety from the hazards of huffing. Meanwhile, the use of bitterant is considered a contaminant by some users and is claimed by some manufacturers to have the potential to damage sensitive electronic components.¹⁷

COVID-19 Pandemic

According to a leading manufacturer interviewed by Euromonitor International, the COVID-19 pandemic significantly impacted the supply chain of aerosol dusters to the United States, particularly for products reliant on international sources for materials, components, or finished goods. These disruptions in international trade were said to have prompted major retailers, notably Walmart and Office Depot/Max, to shift from Chinese-made aerosol dusters to domestic products. This strategic change ensured the availability of private label aerosol duster products, and mitigated supply constraints during a time of heightened demand.

¹⁴ <https://www.nationaltasc.org/inhalant-laws-by-state/>

¹⁵ State Laws on Inhalant Use (Spiegel), July 8, 2009 (<https://cga.ct.gov/>); Families United Against Inhalant Abuse, April 2, 2021 Docket No. CP-21-1 (<https://regulations.gov/>); see also Air Duster Regulations, The Recovery Village, August 2, 2022 – 38 states have laws to restrict access (<https://therecoveryvillage.com/>)¹⁶ Falcon Safety Products, August 26, 2021, Docket No. CP-21-1 (<https://regulations.gov/>)

¹⁶ Falcon Safety Products, August 26, 2021, Docket No. CP-21-1 (<https://regulations.gov/>)

¹⁷ ITW Techspray, "bitterant can lead to unwanted and potentially harmful residues on sensitive surfaces like electronic circuit boards." (<https://techspray.com/>)

MARKET SEGMENTATION

1.16 AEROSOL DUSTERS ARE SEGMENTED FOR CONSUMER USE AND FOR COMMERCIAL USE

Commercial and industrial sales of aerosol dusters are estimated to be slightly larger than consumer retail sales.

While there is overlap in terms of usage, distribution channels, and types of aerosol dusters used by household consumers and professional/industrial users, the table below summarizes some of the distinguishing factors between these two segments.

Table 12: Differences between Household Dusters and Professional Aerosol Dusters

Factor	Household Aerosol Dusters	Professional/Industrial Aerosol Dusters
Purpose and Application	Cleaning tasks at home (electronics, keyboards, vents)	Specialized applications (cleaning equipment, machinery)
Quantity and Frequency of Use	Intermittent and smaller quantities	Higher demand and more frequent use
Product Variations	Smaller sizes, individual use, user-friendly features	Larger quantities, industrial-sized containers, variations for specific applications
Distribution Channels	Sold through retail stores, supermarkets, online platforms. Convenient availability for consumers at common retail outlets	Sold through industrial suppliers, distributors, manufacturers, or specialized suppliers. Often purchased in bulk or through dedicated channels for industrial applications
Packaging and Labeling	Consumer-oriented marketing and packaging designed for consumer retail market	May cater to industrial requirements and specific applications. Professional-grade marketing and packaging, focusing on industrial needs

The primary determining factor of consumer vs. industrial segmentation for aerosol duster products is the distribution channel. Consumer products are typically sold through retail channels that are consumer-focused and accessible, such as Walmart and Amazon, where customers typically purchase products for household use. Commercial/industrial products are typically sold direct to businesses or through wholesalers and distributors such as Grainger and

Uline that are focused on business-to-business sales where products are purchased for business use. While these distribution channels focus on their intended user base, their sales may not be restricted to users within the channel as some commercial/industrial users choose to shop at retail stores, and some consumers choose to shop through commercial/industrial channels. The growing importance of online retailing in serving both segments are key influences on the consumer vs. commercial segments of the aerosol duster market.

Marketing, labeling, and price are additional indicators of intended use between the consumer and commercial segments. Labeling cues on some products clearly identify the intended user, such as: "For professional or industrial use only" as seen in Figure 8 below, sold by Wechem Inc., for industrial users and not intended for retail sale, personal or consumer use.¹⁸ Wechem products are sold direct and available for the commercial/industrial distribution channel.



Figure 8

The aerosol duster products sold for consumer use are typically lower-cost and typically use HFC-152a (difluoroethane) as a propellant. A 10-oz canister of aerosol duster sold primarily for consumer use cost on averaged \$8.36 per canister. Aerosol dusters for consumer use are distributed through consumer retail channels, including hypermarkets (Walmart, Target), office supply stores (Staples), hardware stores (Ace Hardware), discount retailers (Dollar General), and grocery stores (Kroger). **The availability of these products in diverse retail outlets provides easy access for consumers seeking aerosol dusters for household cleaning purposes.**

In contrast, several experts, including manufacturers and a distributor, explained that **commercial/industrial aerosol duster products may be sold directly to professional users or distributed through specialized wholesalers** such as Grainger, Fastenal, Uline, WB Mason, Kimball West, and NTE Electronics. These wholesalers focus on business-to-business sales where products are typically purchased for professional use.

¹⁸ Wechem Inc., Terms and Conditions (<https://wechem.com/>)

Online marketplaces such as Amazon.com play a significant role in serving both consumer and industrial product requirements, as they offer a vast selection and variety of aerosol duster products as observed through EMI's manual web-scraping activity. The convenience and accessibility of online platforms contribute to their popularity as a distribution channel for aerosol dusters.

EMI's estimates that household consumers accounted for approximately 32% of all aerosol duster products sold in 2022, with 9.8 million units. Commercial users were approximately 68% of the total aerosol duster products sold, equivalent to approximately 20.1 million units.

EMI further estimates that approximately 21% of aerosol duster products, approximately 4.25 million units, used by small businesses and professionals working from home, were obtained through the consumer retail channels, boosting retail sales to approximately 47% of the total aerosol duster market distribution. The shift to remote work arrangements has influenced professionals who previously had access to aerosol dusters in their workplace to procure their own products for use at home.

1.17 AEROSOL DUSTERS DESCRIBED AS "AIR"

The analysis below explores the terminology and labeling practices associated with aerosol duster products, shedding light on the usage of terms such as "air dusters" or "canned air" despite the absence of actual air in these products. While these products do not contain air, the terms "air duster" and "canned air" are commonly recognized and utilized by consumers when referring to this product category.

"Air" on product label

Approximately 12% of aerosol dusters examined through store audits and web-scraping featured the term "Air" on the product label itself. This included brands such as Aero, Aervoe, Empack, Fastenal, Fellowes, GC Electronics, Hornady, iDuster, NA Trading, Noble Chemical, RCA, Uline, and Zep. It is noted that some of these brands utilized HFC-134a (tetrafluoroethane) propellant primarily for commercial users, while others were private label products supplied by industrial distributors. Among the brands mentioned, Empack, Fellowes, Hornady, iDuster, and

RCA dusters used HFC-152a (difluoroethane) propellant, typically found in consumer aerosol duster products, and were labeled as "Air" on the product itself. However, it should also be noted that the presence of the term "Air" on RCA dusters was observed inconsistently, making it uncertain whether the term will continue to be used on RCA dusters in the future.

Additionally, discussions with store personnel indicated that consumers often inquire about "canned air" when seeking assistance in locating aerosol duster products within physical stores. Sales associates and store product descriptions, such as Home Depot referring to CRC Duster as "compressed air" on pricing labels while the product label itself references compressed gas, further exemplify the usage of these terms in offline retail settings.

Figure 9



“Air” in online product description

Manual web-scraping results showed 49% of the reviewed products featured the term "Air" in their online product descriptions. The terms "air duster" and "canned air" were the most used descriptors. Experts interviewed revealed that while brands generally avoid using the term "Air" on the product label itself, the terms "canned air" and "air duster" are frequently used by consumers to identify and search for these products online, highlighting a discrepancy between the terminology used by consumers, and even retailers, and the actual composition of aerosol duster products. This is further exhibited when examining Google search trends, which show the terms “canned air” and “air duster” to be more popular than terms like “computer duster,” “keyboard duster,” and “aerosol duster.”¹⁹

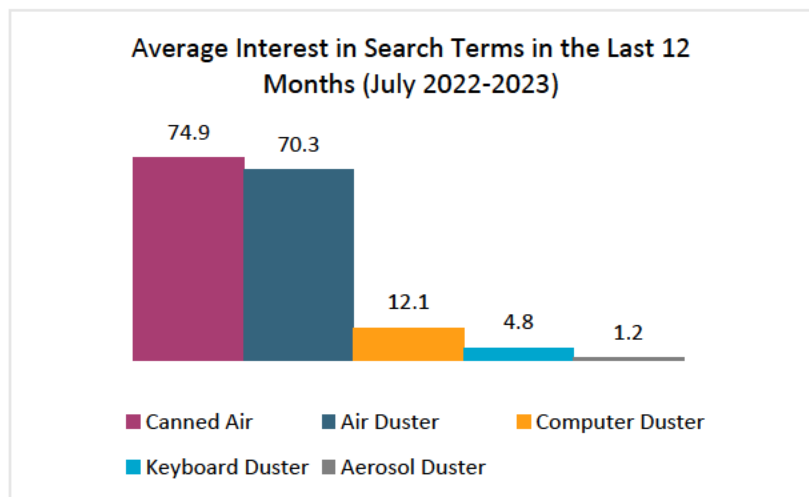


Figure 10

¹⁹ Google Trends numbers represent search interest relative to the highest point on the chart for the given region and time. A value of 100 is the peak popularity for the term. A value of 50 means that the term is half as popular. A score of 0 means there was not enough data for this term.

Marketing products online for consumer discovery employs search engine optimization (SEO). SEO is the process of adjusting a website to increase its visibility to search engines such as Google to make the site more relevant. Companies seek to improve a site’s ranking in organic (unpaid) search queries; that is, how close to the top of the list the site reference appears. To achieve this, the use of keywords (terms that people commonly enter into search engines such as the term “air” in reference to aerosol dusters) are an important factor.

It's easy, people get that (canned air). Just like saying Coca-Cola or Kleenex when you mean a soda or tissue, it's what people connected it with, so that's what people call it. If you're doing a search, they're going to search for canned air, so they better be able to find you if they put it into their web search, I put it on there too, it's a matter of SEO.

-VP Sales, Aerosol Duster Manufacturer

Table 13: Use of the Term “Air”

Aerosol Dusters	Observations (count)	Term “Air” present (count)	Term “Air” present (%)
<i>The term “Air” used on the product label (canister)</i>	150	18	12.0%
<i>The term “Air” used in online product descriptions</i>	316	154	48.7%

WARNING LABELS AND SAFETY MEASURES

The analysis of aerosol duster products reveals an emphasis on consumer safety and responsible usage. Manufacturers have implemented safety measures, including warnings against inhalation abuse and the addition of bitterants to discourage misuse. These warnings are prominently displayed on product labels, and inhalant caution symbols further contribute to raising awareness of the associated risks. Retailers also play a role by enforcing age restrictions and limiting access to aerosol dusters.

1.18 ONLINE WARNINGS

Manual web-scraping of online product listings found that **approximately 47% (95 of 204) of the listings included warnings against inhalation abuse, while 52% (105 out of 204) mentioned the presence of a bitterant or bittering agent.** In many cases, these messages were combined with phrases such as "Contains a bitterant to discourage inhalation abuse."

Table 14: Warnings and Warning Labels Observed in Online Listings

Aerosol Dusters	Online Listings	Listings with warning (count)	Listings with warning (%)
Online Products			
<i>Warnings against inhalation abuse</i>	204	95	46.6%
<i>Presence of bitterant or bittering agent mentioned</i>	204	105	51.5%
<i>Warning against inhalation and presence of bitterant</i>	204	94	46.1%
<i>No warnings or bitterant</i>	204	98	48.0%

1.19 ON-PRODUCT WARNINGS

In-store audits of aerosol duster products provided a smaller sample size for analysis due to the limited size of the market and the fragmented retailer landscape. The analysis covered 53 SKUs from 10 branded products available across 20 retail stores. During these audits, it was observed that all brands (100%) provided some form of warning against inhalation abuse, some of which were provided in additional languages besides English, including French and Spanish. Four types of warnings were noted:

1. **Front panel warnings and safety measures** regarding inhalation, abuse, and the presence of a bitterant were found on nine out of the 10 brands (90%) included. The placement of these warnings varied, with some appearing on the front-top, front-center, or front-bottom of the product packaging.

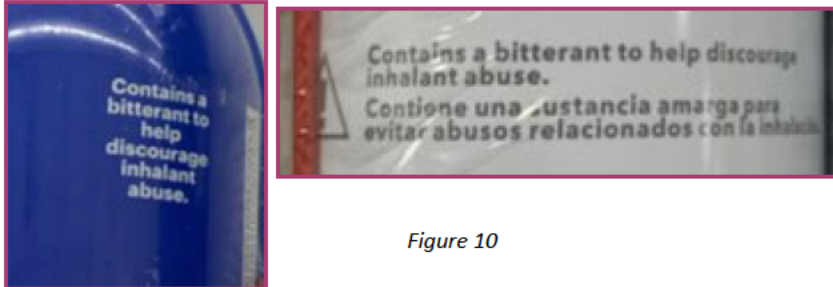


Figure 10

2. **Inhalant abuse public safety announcement** was identified on two of the 10 brands (20%). This announcement served to highlight the serious health hazards associated with deliberate inhalation abuse and mentioned the presence of a bittering agent. These statements were typically located on the back-center or side-vertical of the packaging.



Figure 11

3. **Warning addressing misuse or deliberate concentration and inhaling of the product contents was observed on all brands.** This warning statement, like the previous one, mentioned the presence of a bitterant and the potential harm or fatality resulting from intentional misuse. The placement of this statement varied, with back-top being the most common location, followed by back-center and back-bottom.

“
 We try to go over-the-top on warnings. We even use retail warnings on our B2B products. Typically based on monitoring other products across the industry, and any relevant regulations.
 Everyone wants to be green and safe. We must balance price and performance with compliance...I think consumers are fine with whatever is done to comply with standards, we have no apparent issues with consumers.
 -Marketing Manager, Aerosol Duster Manufacturer
 ”

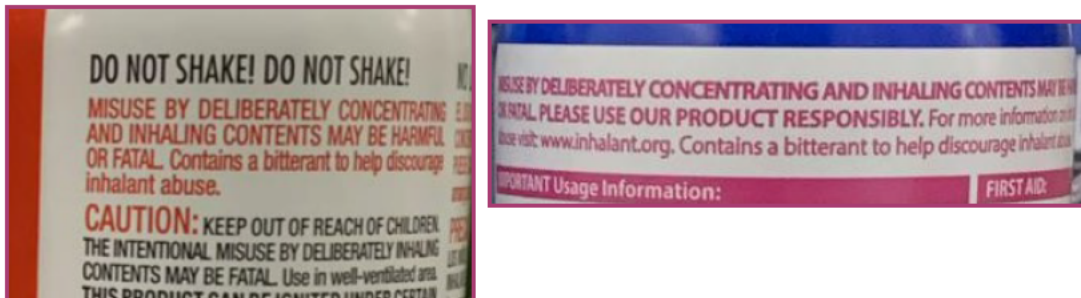


Figure 12

4. **Caution symbols were also observed on seven of the 10 brands (70%),** with five appearing on the front panel and all seven on the back panel. These symbols appear to serve as visual indicators to caution users about potential risks.



Figure 13

These findings indicate that on-product information and warnings on aerosol duster canisters were more complete than product information and warnings provided to consumers online.

1.20 MANUFACTURER EFFORTS

Interviews with industry experts suggest that manufacturers typically monitor industry practices and regulations to ensure compliance while also considering the balance between price, performance, and safety. Manufacturers appear to have voluntarily adopted some safety warnings as observed on products from different manufacturers, so they are easily identified by consumers.

Additionally, EMI obtained information from the publicly available Federal Register Notice regarding safety measures implemented by Falcon Safety Products, a leading supplier.²⁰ Measures supported by Falcon Safety Products include the addition of a bittering agent to aerosol dusters to discourage ingestion, proactive consumer education initiatives in collaboration with various organizations, the application of different warning labels and safety measures, and support for legislative efforts to aid law enforcement in protecting the community from individuals struggling with inhalant abuse through existing driving under the influence (DUI) provisions.

1.21 RETAILER EFFORTS

Minimum Age Requirements

During store audits and online web-scraping, EMI also observed that some retailers overtly enforce minimum age purchasing requirements. In physical stores, purchasers were required to present identification cards to verify they were 18 years or older. This requirement was noticed at various retailers including Walmart, Office Depot/Max, Staples, Target, Best Buy, Dollar General, and Walgreens. Similarly, online purchasers were informed about age restrictions and may have been asked to confirm their age before proceeding with a purchase. This practice was observed on platforms such as Amazon.com, OfficeDepot.com, and Target.com, although these notifications varied by geographic location. A summary published by the Connecticut General Assembly in 2009 listed 24 states with restrictions and age limits, while more recent claims suggest that 42 states have laws addressing inhalant abuse.²¹ A comprehensive summary of state requirements is not available.

²⁰ Falcon Safety Products, August 26, 2021, Docket No. CP-21-1 (<https://regulations.gov/>)

²¹ State Laws on Inhalant Use (Spiegel), July 8, 2009 (<https://cga.ct.gov/>); Families United Against Inhalant Abuse, April 2, 2021 Docket No. CP-21-1 (<https://regulations.gov/>); The Recovery Village, August 2, 2022 (<https://therecoveryvillage.com/>)

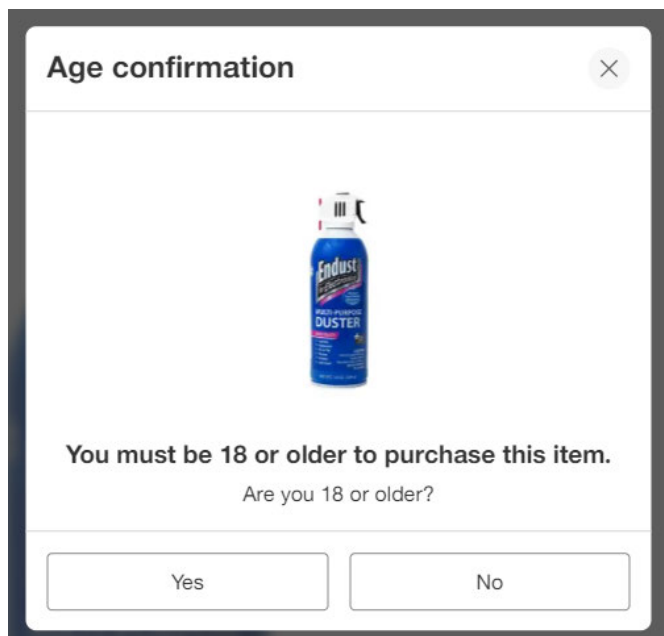


Figure 14

Locked Cases

Store audits revealed that certain store locations had implemented additional precautions to restrict access to aerosol duster products by locking them in cases or keeping them behind service counters. Store operators questioned about this practice at local Walmart, Staples, Target, Dollar General, Walgreens, and O'Reilly Auto Parts stores explained that local store managers had implemented these measures to prevent theft or the potential misuse of the products.

The use of locked cases varied among retail chains; for example, Target in Maryland kept products in a locked case while Target in Connecticut displayed them in an aisle in the electronics department. Retailer practices within a location also varied; for instance, Staples and Walgreens in Connecticut kept the products locked in a case, while nearby Big Lots, Best Buy and Lowe's displayed the products in open store aisles.

1.22 AEROSOL DUSTERS WITH BITTERANT

Store audits and online web-scraping revealed a high penetration of products explicitly stating the inclusion of bitterants used as an inhalation deterrent. Popular brands such as Falcon Dust-Off, Innovera Electronics Duster, and Staples Electronics Duster were among the aerosol duster brands to contain a bitterant. The availability of bitterant-containing products was estimated to be around 70% of all aerosol duster sales, with an even higher percentage of 75.5% for products utilizing HFC-152a (difluoroethane) propellant.

Table 15: Store Audits and Online Products Containing Bitterant

Aerosol Dusters	Number of Products	Contains Bitterant (count)	Contains Bitterant (%)
<i>Contains bitterant (all propellants)</i>	233	163	70.0%
<i>Contains bitterant (HFC-152a-DFE)</i>	208	157	75.5%

The specific type and concentration of bitterant used were not disclosed in product descriptions or safety data sheets. An expert interview with a manufacturer indicated that denatonium benzoate, known as Bitrex, is commonly used as the bitterant in aerosol dusters, leveraging its reputation as "The Bitterest Stuff on Earth." Bitrex is widely utilized in various industries, including laundry packets, paints, antifreeze, pesticides, and nail care products.

PRODUCT ALTERNATIVES

Electric dusters are a potential alternative to aerosol dusters. Product alternatives research was conducted online to identify substitutes and alternatives to aerosol dusters. According to the U.S. EPA, alternative processes, such as pumps, mechanical pressure dispensers, and non-spray dispensers, are substitutes in aerosol propellants (U.S. EPA, Substitutes in Aerosol Propellants). Traditional cleaning alternatives such as brushes, wipes, and squeeze bulbs were not considered as substitutes for aerosol dusters in this analysis.

During the data collection phase of the market research, EMI reviewed online substitutes and alternatives to aerosol dusters, assuming online information reflects in-store availability and pricing. Detailed information was also collected on alternative gas dusters (carbon dioxide and nitrogen), found in limited quantity and distribution, and electric dusters with significant availability included product features such as cordless, vacuum, speed settings, nozzle, and brush attachments, etc. EMI recorded 28 different models of electric dusters, and three models of alternative gas dusters.

“Consumers do not know them (aerosol duster alternatives) today. They are a bit clunky. Cans are very easy and convenient. Cans don’t require tools, batteries, charging, etc.

Consumers typically have quick use and need it now. If you must charge, plug in ...these are not suitable substitutes.

Maybe for an avid user who has regular usage then these might be suitable, but not occasional use for short burst of time typical of most cases. Can is very convenient.

-Retailer of Aerosol Dusters”

Table 16: Store Audits and Online Products Containing Bitterant

Product Alternatives	Number of Brands Recorded	Product Characteristics (actual claims vary by model)
<i>Cordless Electric Dusters</i>	20	30-40 minutes runtime (full power) up to 180 minutes (low power); 3-hour charge; 1 to 3 speed settings; 1.8 to 2.5 oz blowing force; 78 miles per hour airflow; 13 to 17 meters/second blowing force; 6,000Pa-7,000Pa suction power; use 5,000 times; washable filter; HEPA filter; attachments
<i>Corded Electric Dusters</i>	9	250 watts to 600 watts; 70 to 90 cubic feet per minute flow rate; 7 to 27 meters/second blowing force; 6,000Pa-15,000Pa wind pressure; ¼ horsepower motor; 10-foot power cord; 1.9 to 2.7 pounds; attachments; 5-year limited warranty

<i>Alternative Gas Dusters</i>	3	<p>CO2 Gas Duster: PowerClean from American Recorder Technologies, each 16-gram (g) CO2 cartridge should deliver 150-200 half second blasts, available with 16 g, 38 g, and 74 g cartridges.</p> <p>Nitrogen Gas Lab Grade Duster: PowerClean from American Recorder Technologies includes 18 g cartridge (no performance specifications given)</p> <p>CO2 Gas Duster: Generic/Unbranded from unknown supplier, uses 16 g CO2 cartridges (no performance characteristics provided)</p>
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Electric dusters were available from well-known general retailers and specialty use stores, including:

- Amazon
- Best Buy
- Grainger
- Menards
- Newegg
- Office Max/Depot
- Staples
- Walmart

Alternative gas dusters were available direct from the manufacturer, from online distributors (e.g., Lemur Tech), and from eBay. Some American Recorder Technologies SKUs, e.g., PowerClean 74 g kit (\$174.95) were also observed online from Walmart.com, while listings indicated that the product is shipped direct from the manufacturer, American Recorder Technologies, Inc. ²²

These findings reveal that retailers of aerosol duster products also offer electric duster substitutes through their online stores.

²² Eco-Friendly Pro Carbon Dioxide GAS Duster (Canned Air) - 74 Gram Camera · Keyboard (<https://www.walmart.com/>)

Opinions from a selection of aerosol duster industry experts across the supply chain provided mixed reviews of alternatives to aerosol dusters. The overall opinion from the aerosol duster industry is that electronic dusters are not as convenient or powerful as aerosol dusters. While there are benefits to the longevity of rechargeable dusters, there are also limitations such as decreased effectiveness over time and the need for batteries or charging, which are not required with aerosol dusters. It should be noted that these opinions may be biased. Meanwhile, consumer reviews of electric aerosol dusters skewed positive.

Features

These devices feature an electric blower body and grip, accompanied by various accessory tips and brushes that create an air stream to replace aerosol dusters. The substitutes feature continuous airflow for extended use, rechargeable or plug-in power, adjustable speed settings, and accessory tips for enhanced performance. Some devices provide both blown air and vacuum functionality. Certain models include LEDs for illuminating the work area, and claim to be suitable for various cleaning tasks beyond electronics, including furniture, window blinds, and automobiles.

Prices

Prices ranged from \$21.99 for the Bhnddoing Rechargeable Compressed Air Duster to \$153.28 for the MetroVac Datavac 120-volt Electric Duster. Different products offer varying capabilities such as blower function, strength, battery life, accessories, and features.



Figure 15: Bhnddoing Rechargeable Compressed Air Duster (www.amazon.com)



Figure 16: MetroVac Datavac 120-volt Electric Duster (www.grainger.com)

Prices for American Recorder Technologies Carbon Dioxide gas dusters ranged from \$29.99 for the kit shown with 3–16 g cartridges, to \$174.95 for a 74 g cartridge kit sold through Walmart. The generic CO2 Power Cleaner Air Duster kit with 2–16 g cartridges (Figure 17) was observed

on eBay for \$18.90 while Lemur Tech offered the generic applicator for \$22.01, cartridges sold separately.



Figure 17: American Recorder Technologies Eco-Friendly Carbon Dioxide Mini Gas Duster (www.americanrecorder.com)



Figure 18: Generic CO2 Power Cleaner Air Duster (www.ebay.com)

A nitrogen gas duster kit was also available from American Recorder Technologies: Nitro Pro Lab Grade duster with 2–18 g gas cartridges priced at \$169.95.

Retail Channels

Electric duster products were featured on popular consumer retail websites such as Amazon.com, Walmart.com, BestBuy.com, OfficeDepot.com, Staples.com, and Menards.com, appearing when common search terms like “canned air” were used. Consumer reviews are generally positive, with many claiming to use these devices for much more than just cleaning electronics. However subjective differences such as “heavy,” “less powerful,” “loud,” and “expensive” are also noted. Professional, industrial, and specialty suppliers such as Fasenal.com and Grainger.com also offered these products. Alternative gas dusters were available direct from the manufacturer, and from online distributors (e.g., Lemur Tech). Specific search terms such as “CO2 duster” and “nitrogen duster” were required to identify these products online which did not appear when more common “canned air” search terms were used.

Top reviews from the United States



Figure 19

FINAL SUMMARY AND CONCLUSIONS

Aerosol dusters, also known as canned air, compressed air, and compressed gas, are pressurized steel or aluminum containers filled with liquified gas propellants that are dispensed through a spray nozzle. These products are used by household consumers and commercial/industrial professionals to create a concentrated blast of compressed gas to clean and remove dust, dirt, and debris from sensitive or hard-to-reach surfaces, including computer keyboards, laptops, desktops, and printers. The most common aerosol duster product in the United States was found to be a 10-oz canister of HFC-152a (difluoroethane) propellant. No significant technical changes have been noted in these products over the past 10 years, and manufacturers typically warranty these products for periods ranging from 12 months to 5 years; the actual shelf life of aerosol dusters may exceed 10 years.

The total aerosol duster market in the United States is estimated to be 29.9 million units with a retail market value of \$304.2 million in 2022. Nearly half (47%), or 14.1 million units valued at \$143.4 million, were sold through consumer retail chains such as Walmart, Staples, and Amazon through both online and physical stores, while 53%, or 15.8 million units valued at \$160.8 million, were sold through professional distribution channels primarily intended for commercial/industrial users. Approximately 67% of retail sales were made through physical stores that typically offered just one or two brands, including private label products, while 33% of retail sales were made through e-commerce.

Approximately 40 suppliers of aerosol duster products were identified for the United States, at least 16 of which were considered small businesses. Falcon Safety Products was identified as the leading U.S. supplier of aerosol duster products for retail sale, followed by Max Pro and Norazza Endust for electronics. Private label products were seen to be common in the category with as much as 25% to 40% of retail aerosol dusters sold being private label products.

Euromonitor International segmented the supply of aerosol dusters products into consumer and commercial/industrial categories primarily based on the channel where the products were identified for distribution; that is, through consumer-facing retailers such as Walmart and Office Depot, or through industrial distributors including Grainger and Uline. Other indicators that further guided this process included marketing and labeling messages. While neither distribution channel is specifically restricted to consumer or commercial/industrial users, by this process Euromonitor International was nevertheless able to conclude that aerosol duster products were widely available for household consumer purchase through retail stores from popular brick-and-mortar outlets and online retailers.

Aerosol dusters are commonly referred to as canned air, compressed air, and air dusters even though they do not contain air. EMI found that 12% of aerosol duster products examined through store audits and manual web-scraping featured the term “Air” on product labels, and

that nearly half of online descriptions used the term “Air” somewhere in the product description. An expert interviewed for this report explained that since consumers commonly refer to the product as “air,” the use of the term to describe the product aligns with how consumers identify the category.

Approximately half of online product listings for aerosol dusters were found to include warnings against inhalation abuse, and half mentioned that bitterant was added to discourage misuse. All products physically viewed in stores included warnings against inhalation abuse on product labels, some of which were presented in multiple languages, and approximately 70% of products claimed to contain a bitterant. A few stores were seen to restrict access to aerosol duster products by keeping them in locked cabinets or behind service counters, while others enforced minimum age requirements (18+) prior to purchase in physical stores or online.

Alternatives to aerosol dusters were identified arranged into broad categories, electric dusters, and alternative gas dusters. Electric dusters are motorized handheld blowers that discharge a stream of air when turned on. Such products were found to be widely available online through popular retailers such as Amazon and Walmart, available with both battery or corded power solutions and a variety of accessories to enhance their cleaning capabilities. Alternative gas dusters are similar in appearance and function to aerosol dusters except that these utilize removeable carbon dioxide or nitrogen gas cartridges. These gas dusters were found with limited availability from just one manufacturer (American Recorder Technologies) and one unbranded generic product of unknown origin.

SOURCE LIST

Source name/type*	Project reference or website (as applicable)
Manual online web-scraping	74 unique websites were scraped: Amazon.com; Walmart.com; OfficeDepot.com; Grainger.com; Staples.com; WBMason.com; Newegg.com; Instacart.com; HomeDepot.com; Target.com; KimballMidwest.com; BigLots.com; AceHardware.com; Lowes.com; Uline.com; Fastenal.com; Menards.com; Bestbuy.com; BJs.com; SamsClub.com; HarrisTeeter.com; Kroger.com; Walgreens.com; CVS.com; Meijer.com; Costco.com; FredMeyer.com; Shop.Wegmans.com; OReillyAuto.com; DollarGeneral.com; BedBathandBeyond.com; DollarTree.com; Cabellas.com; BassPro.com; DicksSportingGoods.com; FalconSafety.com; EndustforElectronics.com; AirDuster.com; Chemtronics.com; Techspray.com; CRCIndustries.com; PerfectData.com; Advantus.com; Empack.ca; Spraywayinc.com; ABCCompounding.com; MicroCare.com; IdealIndustries.com; NTEinc.com; VoxxAccessories.com; AWDUS.com; MyInnova.com; MGChemicals.com; LHBIIndustries.com; Uline.com; GCElectronics.com; StonerSolutions.com; ACLStaticide.com; Aervoe.com; AlbaChem.com; DigitalInnovations.com; Belart.com; Belkin.com; Caig.com; Zep.com; Fellowes.com; Hornady.com; Newark.com; NATrading.com; NobleChemical.com; NXTTech.com; QuestSpecialty.com; BusinessSourceProducts.com; Wechem.com
Interview #1	Marketing Executive, Aerosol Duster Manufacturer
Interview #2	Communications Manager, Industry Trade Association (partial interview)
Interview #3	Sales Manager, Industrial Distributor
Interview #4	Marketing Manager, Aerosol Duster Manufacturer
Interview #5	Marketing Manager, Aerosol Duster Manufacturer
Interview #6	Aerosol Duster Industry Consultant
Interview #7	Store Manager, Office Supply Retailer
Interview #8	Home Improvement Retail Industry Consultant
Interview #9	Sales Executive, Aerosol Duster Manufacturer
Most populated US cities, Euromonitor Research, World Population Review, May 2023	https://worldpopulationreview.com/us-cities

Highest Drug Use by City, American Addiction Centers, May 5, 2023	https://americanaddictioncenters.org/blog/substance-abuse-by-city
7 US Cities with The Worst Drug Problems, Scottsdale Recovery, accessed May 2023	https://scottsdalerecovery.com/7-us-cities-with-the-worst-drug-problems/
10 Cities with Worst Drug Problems, Monarch Shores, accessed May 2023	https://www.monarchshores.com/drug-addiction/10-cities-with-worst-drug-problems/
The Paperwork Reduction Act (PRA), US General Services Administration, accessed June 2023	https://pra.digital.gov/
Business Research Insights, Aug 2022	https://www.businessresearchinsights.com/market-reports/air-duster-market-100669
Chemical Watch, 9/9/21	https://chemicalwatch.com/332004/industry-presses-back-on-need-for-rule-to-curb-aerosol-duster-inhalation
US EPA Substitutes in Propellants: Significant New Alternatives Policy, accessed 5/15/23	https://www.epa.gov/snap/substitutes-propellants#:~:text=59%20FR%2013044.-,It%20is%20illegal%20to%20manufacture%20or%20sell%20aerosols%20containing%20HFC,82.15(g)(2).&text=Unacceptable%20as%20of%20January%201%2C%202016.&text=Unacceptable%20as%20of%20July%2020,acceptable%2C%20subject%20to%20use%20conditions.
Federal Register, 6/29/21	https://www.federalregister.gov/documents/2021/06/29/2021-13337/petition-requesting-rulemaking-on-duster-aerosol-products
Google Trends	https://trends.google.com/trends/
GlobalNewsWire, Absolute Reports Pvt Ltd, 2/16/23	https://www.globenewswire.com/news-release/2023/02/16/2609648/0/en/Air-Duster-Market-Revenue-USD-186-Million-by-2029-Business-Opportunities-Growth-Factors-Top-Countries-Latest-Technology-Development-Sales-Price-Revenue-Gross-Margin-Key-Players-Typ.html
2019 Aerosol Pressurized Products Survey, Household & Commercial Products Association, 2020	2018_AerosolPressurizedProductsSurvey_HouseholdCommercialProductsAssociation.pdf
JUSTIA Patents, Aug 22, 2007,	https://patents.justia.com/patent/7754096
Market Actives, LLC	https://www.distilledspirits.org/wp-content/uploads/2020/05/Handling-Bitrex-2020_.pdf
MarketWatch, 360ResearchReports.com, 3/19/23	https://www.marketwatch.com/press-release/air-duster-market-size-and-forecast-till-2028-2023-03-19
Mediaplaynews.com, Jun 8, 2021	https://www.mediaplaynews.com/npd-online-represented-61-of-consumer-electronics-sales-during-pandemic/
National TASC	https://www.nationaltasc.org/inhalant-laws-by-state/

Oehha.ca.gov, Aug 1, 2017	https://oehha.ca.gov/proposition-65/general-info/proposition-65-plain-language#:~:text=What%20is%20Proposition%2065%3F,original%20name%20of%20Proposition%2065
PYMNTS.com, Feb 17, 2023	https://www.pymnts.com/consumer-insights/2023/consumers-increasingly-go-online-to-buy-electronics-and-cars-too/#:~:text=Nearly%20a%20Third%20of%20Consumer%20Electronics%20Are%20Bought%20Online&text=We're%20going%20online%2C%20more,gadgets%20that%20keep%20us%20online.&text=%E2%80%9Cs%20hare%E2%80%9D%20of%20eCommerce%20sales%20across,in%20the%20fourth%20quarter%20vs
Streetbuzz	https://www.streetbuzz.pk/education/air-duster-industry-by-application-size-share-and-forecast-2030/103882/
Science Focus, May 5, 2023	https://www.sciencefocus.com/news/best-cleaning-gadgets/
Techspray	https://www.techspray.com/everything-you-need-to-know-about-air-duster-but-were-afraid-to-ask
The Verge, Jan 12, 2023	https://www.theverge.com/23551860/electric-air-duster-cleaning-pc-compressed-air
20 ifixit, Jun 5, 2019	https://www.ifixit.com/News/29870/cut-your-dirty-canned-air-habit-with-these-three-alternatives
The Recovery Village, Aug 3, 2022	https://www.therecoveryvillage.com/air-duster-abuse/how-long-stay-in-system/#:~:text=In%20the%20U.S.%2C%2038%20states,possessing%20inhalants%20in%20many%20states
Zarimi cordless electric air duster	https://www.amazon.com/Compressed-air-Duster-Keyboard-Replacement/dp/B0B4S5P1H8/ref=psdc_281501_t1_B0BP27LBKL?th=1
Zippa.com, Feb 2023	https://www.zippia.com/advice/online-shopping-statistics/#:~:text=As%20of%202021%2C%20In%20store,21%25%20of%20all%20global%20sales

*Key to assessment of inputs:

- Green highlight:** Most relevant information or data sources
- Yellow highlight:** Useful information or data sources
- Blue highlight:** Less relevant information or data sources

APPENDICES

1.23 APPENDIX A: U.S. EPA SUBSTITUTES IN AEROSOL PROPELLANTS

Substitute	ODP	GWP	SNAP Listing Date	Comments	Flammable
Alternative processes (pumps, mechanical pressure dispensers, non-spray dispensers)	0	0	March 18, 1994	Acceptable	No
C ₃ -C ₆ Saturated light hydrocarbons (e.g., propane, n-butane, isobutane)	0	3 to 10	March 18, 1994	Use with the necessary precautions due to flammability	Yes
Compressed Gases (carbon dioxide, air, nitrogen, nitrous oxide)	0 to 0.017	0 to 300	March 18, 1994	Acceptable	No
Dimethyl Ether	0	<5	March 18, 1994	Use with the necessary precautions due to flammability. Blends of DME with HCFCs are subject to section 610 restrictions.	Yes
HCFC-142b	0.065	2,310	March 18, 1994; July 20, 2015	Unacceptable as of September 18, 2015	Yes
HCFC-22	0.055	1,810	March 18, 1994; July 20, 2015	Unacceptable as of September 18, 2015	No

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HFC-125	0	3,500	March 18, 1994; July 20, 2015	Unacceptable as of January 1, 2016	No
HFC-134a	0	1,430	March 18, 1994; July 20, 2015	<p>Unacceptable as of July 20, 2016 except for uses listed as acceptable, subject to use conditions. [1]</p> <p>Acceptable with Use Conditions: From July 20, 2016 to January 1, 2018, acceptable subject to use conditions for products for which new formulations require federal governmental review and products for smoke detector functionality testing. As of July 20, 2016, acceptable subject to use conditions for a number of additional uses specified in the rule. As of July 20, 2016, blends of HFC-134a acceptable for FDA-approved MDIs for medical purposes.</p>	No
HFC-152a	0	124	March 18, 1994	Acceptable	Yes
HFC-227ea	0	3,220	May 22, 1998; July 20, 2015	<p>Unacceptable as of July 20, 2016 except for uses listed as acceptable, subject to use conditions. [1]</p> <p>Acceptable as of July 20, 2016 for FDA-approved MDIs for medical purposes.</p>	No
HFO-1234ze(E) (trans-1,3,3,3-tetrafluoroprop-1-ene)	0	6	June 16, 2010	CAS Reg. No. is 29118-24-9. It has a recommended workplace exposure limit of 1000 ppm and a preliminary recommended acute consumer exposure limit of 420 ppm.	No

SF6	0	22,800	October 16, 1996	Unacceptable	No
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Source: U.S. EPA Substitutes in Aerosol Propellants, Significant New Alternatives Policy

1.24 APPENDIX B: EXPERT INTERVIEW DISCUSSION GUIDE.

Interviewees are engaged in discussion using these questions as a guide. No single interviewee can answer all questions, answers are sought on a best-effort basis.

1.24.1 INTRODUCTION

1. Please describe your background and role(s) as it relates to the sourcing/distribution/sale/promotion of aerosol duster products in the United States?
2. How big is your company (e.g., no. employees, annual sales, geographic coverage)? What portion of your company's activities would you say are based on aerosol duster products? (E.g., main activity, small percent of overall revenue, growth area- seek percentages of total company if possible.)
3. We've read that the Household & Commercial Products Association (HCPA) estimates that 3.75 billion aerosol cans were filled in the United States in 2020. Does your company fill aerosol products of any of the following types:
4. In the past ten to fifteen years (to 2006) what have you seen as the key trends that have impacted the aerosol duster market in the United States? E.g., what are some of the things that have impacted the U.S. aerosol duster market the most?

1.24.2 MARKET CHARACTERISTICS

5. Is the market for aerosol duster products clearly segmented into commercial use and products for household consumer use? If so, approximately what proportion of the market is designated for commercial use only? (If the respondent cannot approximate what proportion of this market is for commercial use only, then ask them to explain why it is difficult to distinguish between consumer use and commercial use.)
6. Approximately how many United States households do you believe use aerosol duster products (or what percentage of United States households)? How has household use changed over the past 10 to 15 years? When did consumer aerosol duster use change? Why?
7. Where do consumer households typically obtain their aerosol duster products today (e.g., distribution channels including retail in-store, retail online, direct from manufacturers, other)? What is the relative share of each distribution channel; i.e., total should sum to 100% (e.g., 70% in-store/30% online)? Is this different distribution for commercial users?

8. Which retailers are the most prominent suppliers of aerosol dusters to consumer households from your point of view? (E.g., Amazon, Walmart, Sam's, Staples, Costco, Office Depot, Best Buy, Grainger, Newegg, etc.) What is their relative market share?
9. What would you say is the typical retail markup (margin) on aerosol dusters?
10. How has household consumer sourcing of these products changed over the past 10 to 15 years? (E.g., purchase frequency, online sales, retailers.) Why?
11. Approximately how often does a typical household consumer purchase an aerosol duster product? Is this different for commercial users?
12. How quickly does a household consumer typically use up an aerosol duster product after purchase (first use, weeks, months, other)? Why?
13. How is this different from commercial users?
14. How has inflation impacted pricing and household demand for aerosol duster products?
15. What impact do you see/anticipate from electronic duster alternatives to aerosol dusters (e.g., battery and corded blowers, vacs)? What is your view of the suitability of these products to meet consumer use? Why?
16. What is the size (value/volume) of the total aerosol duster market in the United States today? Which products do you include in that estimate (e.g., disposable – electronic duster, non-flammable – special applications duster, eco – environmental duster, refillable – multiuse canisters, others)?
17. What do you think is the size (value/volume) of the aerosol duster market sold to household consumers in the United States?
18. What portion of domestic aerosol duster products are imported vs. manufactured domestically?
19. How has the market size changed over the past 10 and 15 years, respectively (% growth in value/volume)? How has growth changed over the past five years (% growth YOY)?
20. Who would you say are the leading manufacturers in the aerosol duster market (e.g., Falcon, Innovera, Maxell, Norazza, Max Professional, ITW,

CRC, others.)? What is their share of the total market (% value/volume)?
Their share of the household consumer market (% value/volume)?

21. What private label products are most prominent, such as Office Depot, Staples, Walmart-Surfs Onn (P/L), Best Buy-Insignia (P/L)? What is their % share of the household consumer market?
22. What is their % share of the household consumer market?

1.24.3 PRODUCT CHARACTERISTICS

23. Have aerosol duster products and features changed over the past 10 to 15 years, or have they stayed relatively the same? If yes, how have features changed? (List the changes made to aerosol duster products and features made over the past 10 to 15 years, if any.)
24. What is the shelf life of these products (e.g., 1 year, 5 years, 10 years, other)?
25. How often are new aerosol duster products introduced to the market?
26. In your estimation, what are the most commonly used propellants in household consumer aerosol duster products (e.g., DFE also called HFC-152a, HFC-134a, HFO-1234ze, other)? What is the relative share of each product by attribute (total should sum to 100 percent)?
27. Are you aware of any standards used by the industry today to guide the development and placement of warnings against inhalation risks and potential abuse of aerosol dusters? What is the source of these standards? Are they specific to aerosol dusters or are they adapted from other aerosol product categories?
28. Are there any noteworthy innovations emerging that will promote consumer safety and/or prevent abuse?
29. How do you think consumers perceive anti-abuse features and initiatives in aerosol dusters (bitterants, warning statements, icons, trigger locks, age restrictions for purchase, others)?
30. What type of chemical is typically used to create the bitterant in aerosol duster products?

1.24.4 PROMOTIONAL ACTIVITIES

31. We've seen some products described as "Air" or "Canned Air" in advertising materials or online product descriptions. Why (competitive

advantage)? What is the market share (% value/volume) of these products?

32. What is the share of products (% value/volume) labeled as "Air" or "Canned Air" on the product packaging itself? Why?
33. What additional matters do you think we should consider in regard to the aerosol duster market, especially as it applies to consumer household use?

1.25 APPENDIX C: EUROMONITOR INTERNATIONAL'S APPROACH TO AEROSOL DUSTER MARKET SIZING

Euromonitor International leverages a multi-method approach, utilizing inputs from multiple sources collected throughout the research process to estimate the market size of the aerosol duster category in the United States. These sources included information obtained through:

- 1) Primary research conducted by Euromonitor International, including:
 - a. Manual web-scraping of the aerosol duster category,
 - b. Store audits,
 - c. Trade interviews.
- 2) Secondary research reports that provided sizing estimates, trends, etc. (e.g., Absolute Reports, Business Research Insights, 360 Research Reports). These reports are global in nature and typically address manufacturers, expressing sizing estimates in terms of production and producer prices.
- 3) Industry surveys, in this case a survey conducted by the Household Consumer Products Trade Association (HCPA) regarding Aerosol Products in 2018.

Each source was individually assessed to evaluate its ability to create a final market size estimate, and then utilized in a multi-step process to establish market sizes incorporating as many inputs as possible. These independent estimates were then compared and weighted to triangulate the total market size estimate with more significance given to those inputs that were seen by Euromonitor International as more reliable and less significance to those that were seen to be less reliable. For example, Estimate #1 utilized market reports that provided global sales estimates requiring additional processing to obtain a United States market size. This estimate is therefore treated with lower confidence in comparison to the others.

These estimates incorporate inputs eight independent sources with cross-verification and confirmation where possible, delivering four independent market size estimates ranging from 21.8 million units to 35.0 million units with the final weighted market size conclusion by Euromonitor International being 29.9 million units.

Table 16: Aerosol Duster Market Size Estimate (units)

Aerosol Dusters	Market Size (million)
<i>U.S. Market Size Estimates</i>	
#1	21.8
#2	27.7
#3	25.0
#4	35.0
<i>Final Euromonitor International Estimate</i>	29.9

Euromonitor International identified each aerosol duster product as primarily consumer or commercial/professional products based on a multi-step analysis of the web-scraping data, supplemental online research, and input from interviewees.

Euromonitor International also estimated the online (33%) vs. in-store (67%) sales contributions through a multi-step analysis of supplemental research into online sales of electronics, health & personal care products, and miscellaneous products as a proxy for aerosol dusters, applying supporting information from interviews with manufacturers and a participating retailer.