2026
防晒喷雾白皮书2.0

技术驱动 · 价值深挖 · 可持续发展

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TOP1

Chinese Spray Cosmetics ODM Companies

33

National/Industrial/Association Standards (Lead or Co-compiled)

Tiantu Fine Chemical

52 items

39 Invention Patents and 13 Utility Model Patents

100+

Independently Developed and Approved Special Cosmetic

Registration Certificates for Sunscreen Products

200+

Serving Global Companies/Brands

The "Golden Window" for Sunscreen Sprays: Technological Dividends Reshaping the Multi-Billion-Dollar Beauty Market

In the annual review of the beauty industry, the suncare category consistently stands out as one of the most closely watched barometers. Several data points from 2025 outline the profound transformation underway in this sector: China's suncare market is advancing towards a scale of 32 billion RMB; consumer concern for "safety" has surged to 82.1%. Moving from explosive growth to intensive cultivation, the trajectory of category evolution is clear.

As an industry observer, I have witnessed the complete transformation of sunscreen sprays in the Chinese market – from a marginal category constrained by specific scenarios to an essential item for outdoor activities, commuting, and touch-ups across all settings; from dominance by international brands to domestic brands seizing opportunities through content-driven e-commerce; from innovations in formulation to the systematic application of fundamental technologies such as microencapsulation, biomimetic membranes, and liquid crystal emulsification. In less than a decade, its identity has been completely reshaped.

Today, the industry stands at a turning point once again.

In 2023, the market share of sunscreen sprays reached 7.22%, making it the second-largest subcategory second only to sunscreen lotions/creams; referring to the 47.8% category structure of EU personal care aerosols, there is considerable room for improvement in category penetration in the Chinese market. The awakening of male sun protection awareness (TGI 308%), the segmented demands of infants, children and sensitive skin, and the extension of makeup-skincare integration scenarios—all are redefining the incremental space.

However, the underlying logic of competition has changed. Growth driven purely by traffic is unsustainable. Consumer demands for experience are escalating. Stricter regulations and longer filing cycles have raised the industry's entry barriers. In 2025, the number of filed sunscreen spray products decreased by 30.9% year-on-year, and the CR10 concentration ratio approached 60%. The era of unchecked growth is over; the phase of intensive cultivation has begun – technological reserves and compliance capabilities are becoming the key variables determining brand differentiation.

In this period of transition, the value of industrial chain collaboration is becoming increasingly prominent. ODM enterprises like Tiantu Fine Chemical, leveraging over 100 independently obtained special sunscreen permits, participation in drafting 33 national, industrial, and group standards, 52 national patents, the industry's sole CNAS-accredited laboratory for aerosols, and approval for the only new raw material in the aerosol sector – Annona Squamosa Fruit Extract, stand as undisputed leaders in scientific research and technology within the aerosol cosmetics industry. They are also authoritatively certified as China's premier ODM enterprise for spray cosmetics. They provide brand owners with comprehensive support encompassing "technological certainty + compliance assurance + iterative responsiveness." Deep-seated collaboration reduces innovation costs and allows brands to focus more intently on consumer communication and scenario management – in a fast-paced market, this represents not only an optimization of efficiency but also a strategic concentration of effort.

Of course, a healthy industrial ecosystem requires the coexistence and co-prosperity of diverse players. The technological depth of international brands, the channel acumen of emerging domestic brands, and the process expertise of manufacturing enterprises – the complementarity of these different capabilities drives the industry towards higher quality evolution.

The original intention of this white paper is precisely to provide a "navigation reference" for this transitional period. It systematically maps out the global landscape, the Chinese market, technological pathways, and compliance trends, serving both as a summary of the past and a projection for the future. May industry practitioners find their own strategic anchor points amidst the myriad of signals – not to merely chase fleeting trends, but to build sustainable category value.

The story of sunscreen sprays is entering a more wonderful chapter. May we witness and participate in this steady leap from "explosive growth" to "maturity" with patience and professionalism.

Deng Min

Chairman of Pinguan

CiE Beauty Innovation Exhibition Curator

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1 Preface

1.1 Background of Compilation

With the improvement of global consumers' sun protection awareness and the expansion of application scenarios, the use of suncare products – such as sunscreen lotions, creams, and sprays – has become increasingly popular. Evolving from a summer essential to a four-season necessity, the entire suncare market is booming with broad prospects. Among these, sunscreen sprays, integrating multiple advantages such as a refreshing and quick-drying feel, water and sweat resistance, a cooling sensation, convenient application, and easy touch-ups over large areas, are particularly well-suited for various outdoor scenarios including mountain climbing, hiking, camping, seaside activities, swimming, and outdoor sports. They have gradually become the second-largest suncare category after sunscreen lotions/creams, with the sunscreen spray market experiencing high-speed growth for several consecutive years. From 2023 to 2025, the compound annual growth rate (CAGR) of China's sunscreen spray market exceeded 23%, making it one of the fastest-growing segments in the personal care field.

According to the electronic edition of the U.S. magazine SPRAY (Issue 10, 2025), China's aerosol output reached 2.56 billion cans in 2024. Among these, the output of personal care (cosmetics) aerosols reached 450 million cans, accounting for 17.58% of the national total. Compared with the EU's 1.654 billion cans (see Figure 1), China's cosmetics aerosol market has significant potential and broad development space. As an important representative category within this sector, sunscreen sprays are poised for substantial growth momentum.

1.2 Purpose of Compilation

The purpose of this white paper is to:

1. Systematically sort out the technological development context and market evolution trend of the sunscreen spray industry;
2. Analyze the impact of changes in domestic and foreign laws, regulations and standards on the industry;
3. Provide decision-making references for industry participants in technological R&D, production and manufacturing, and market layout;

4. Promote the high-quality and sustainable development of the sunscreen spray industry.

1.3 Scope of Compilation

This report covers the development status of the sunscreen spray industry from 2023 to 2025, predicts the trend from 2026 to 2028, focuses on analyzing changes in three dimensions: technology, market and supervision, and pays special attention to the uniqueness of the Chinese market.

2 Industry Overview

2.1 Industry Background

According to the report of the European Aerosol Federation (FEA), in 2024, the global aerosol output reached 15.453 billion cans, with China's output of 2.560 billion cans, second only to the United States' 3.752 billion cans, ranking second in the world (see Figure 1). The EU (six countries including Germany, France and Italy) had a total of 3.460 billion cans, of which personal care (cosmetics) accounted for 47.8% (1.654 billion cans), ranking first in the aerosol category (see Figure 2).

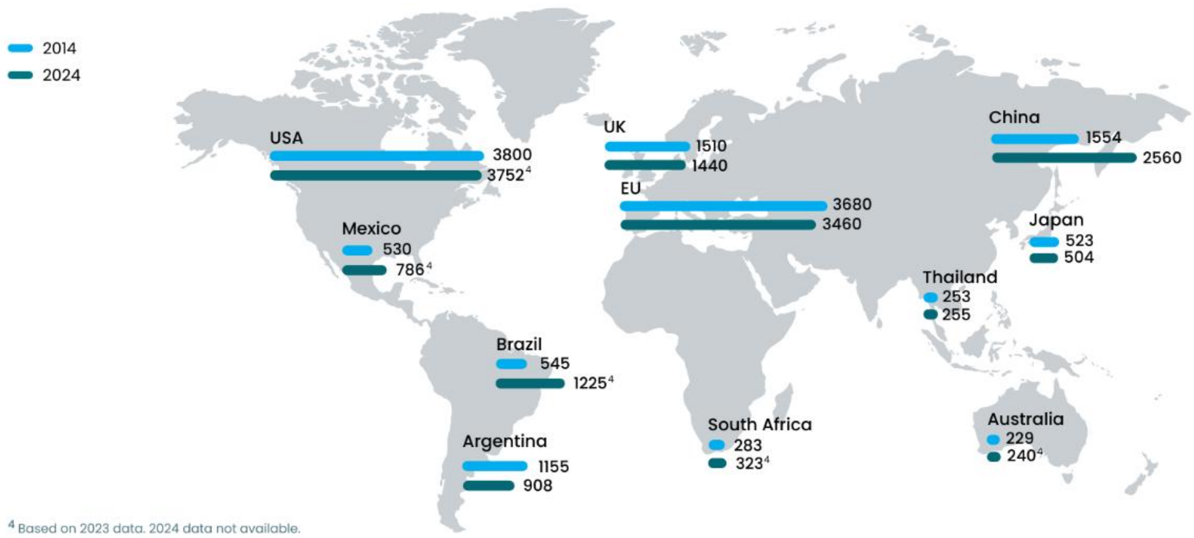


Image source: Report from the European Aerosol Federation

Figure 1: Global aerosol production data (citing the report of the European Aerosol Federation)

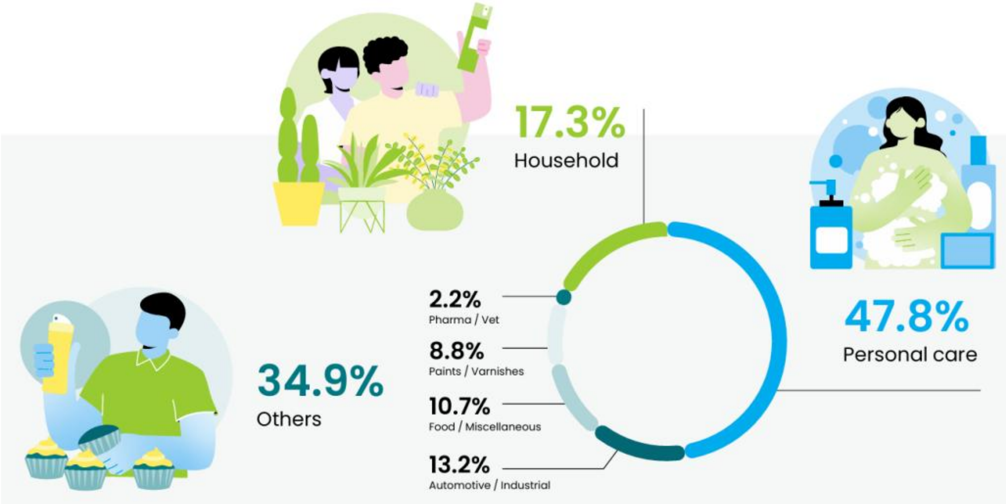


Image source: Report from the European Aerosol Federation

Figure 2 Production of different types of aerosol products in the European Union

2 Industry Overview

2.2 Definition and Classification of Sunscreen Sprays

A sunscreen spray is a cosmetic product that delivers liquid, emulsion, or powder formulations in a mist form via mechanical pressure or propellants, designed to protect the skin from ultraviolet (UV) radiation. Based on their operating principles, sunscreen sprays are categorized into three types:

Table 1 Classification and Key Attributes of Sunscreen Sprays

Classification	**Working Principle**	**Core Characteristics**	**Market Share (2025)**
Conventional Aerosol	Utilizes propellants (e.g., butane, propane, compressed gas)	Superior atomization, high user convenience, and cost-effective	75%
Dual-Chamber Valve System	Physically separates the formulation from the propellant	Preserves sensitive ingredients; produces a fine, uniform mist; user-friendly	< 5%
Mechanical Pump Spray	Propellant-free; relies on mechanical pump pressure for atomization	Environmentally friendly; however, produces coarser particles and lacks continuous mist output	25%

2.3 Global and Chinese Market Status

2.3.1 Global Market

The global suncare market is experiencing steady expansion. According to 2025 data from Euromonitor International, the market is currently valued at USD 14.5 billion and is projected to surpass USD 20 billion by 2029. This robust growth is primarily driven by rising global awareness of the harmful effects of UV radiation. Evolving lifestyles, characterized by increased participation in outdoor activities and leisure travel, have further amplified the demand for effective UV protection solutions.

Furthermore, continuous innovation and the development of advanced formulations within the beauty and personal care industry are key catalysts for market growth. Manufacturers are actively launching products with higher Sun Protection Factor (SPF) levels, broad-spectrum coverage, and enhanced water resistance to align with evolving consumer preferences and regulatory requirements.

By age segment, the market is divided into adults and children. In 2023, the adult segment held the dominant market share at 62.52%. This dominance is attributed to higher purchasing power, greater sun protection awareness, and more diverse application scenarios among adults. Compared to children, adults typically use suncare products across daily commutes, sports, and leisure travel. Additionally, adults are more likely to seek professional, skin-type-specific suncare solutions, thereby driving the demand for specialized sunscreens and related products.

Figure 3 Regional Distribution of the Global Suncare Market (Source: *Suncare Products and Market*)

Geographically, the global suncare market is segmented into North America, Europe, Asia-Pacific (APAC), the Middle East and Africa (MEA), and Latin America. In 2023, North America accounted for 36.19% of the global market, with a value of USD 5.01 billion (see Figure 3). This leadership is underpinned by strong economic power, high disposable income, and widespread consumer awareness of skin health. The region’s mature market infrastructure, including sophisticated distribution and marketing networks, makes it highly attractive to industry players.

The Asia-Pacific region is forecasted to register the highest Compound Annual Growth Rate (CAGR) of 6.78% from 2024 to 2031. This growth is fueled by high e-commerce penetration, rising consumer purchasing power, and growing awareness of skincare importance. Moreover, climate-driven innovation has made "lightweight, heat, and humidity resistance" key product attributes. Consumers in this region demand high-protection products that feel weightless, offer brightening benefits, and maintain efficacy in hot and humid conditions. The rising focus on skin health and the popularity of outdoor activities are further propelling market demand. With its large population base—particularly in China, India, and Japan—the APAC region is poised for significant growth.

The global competitive landscape is characterized by strategic initiatives such as partnerships, mergers and acquisitions (M&A), product innovation, and joint ventures, as major players seek to expand their portfolios and regional market share. Key strategic actions include increased investment in research and development (R&D), construction of new manufacturing facilities, and supply chain optimization, all of which are expected to unlock new growth opportunities.

2.3.2 Chinese Market

2.3.2.1 Market Size and Growth Trajectory

China’s suncare market has entered a mature phase, yet significant structural growth opportunities remain. According to sales data from *FBeauty Future Track*, suncare products sold on China’s three major e-commerce platforms (Taotian, Douyin, and JD.com) reached 155 million units with a total Gross Merchandise Value (GMV) of RMB 14.153 billion from January to November 2025 (see Table 2). This figure has already exceeded the full-year 2024 GMV of RMB 12.045 billion, solidifying suncare as a high-growth category with strong market certainty.

Table 2 Sales Performance of Suncare Products on Three Major Platforms

2025年1—11月淘天、抖音、京东3大电商品牌防晒销售额排名

排序	品牌	销售额同比变化
1	蜜丝婷	1.12%
2	巴黎欧莱雅	47.94%
3	安热沙	-15.28%
4	兰蔻	26.22%
5	珀莱雅	160.26%
6	薇诺娜	3.23%
7	美康粉黛	-9.99%
8	修丽可	32.18%
9	资生堂	-18.08%
10	花西子	24.04%
11	babi	260.51%
12	雅丽洁	49.76%
13	柳丝木	-5.28%
14	理肤泉	1.47%
15	悠宜	-4.29%
16	伊菲丹	19.72%
17	羽西	726.56%
18	美肤宝	26.26%
19	肌肤之钥	197.85%
20	黛珂	-22.34%

制图/FBeauty未来迹 FUTURE BEAUTY

Data from Qingyan Intelligence highlights sunscreen sprays as a dynamic segment within the suncare portfolio. In 2023, sunscreen sprays held a 7.22% market share (see Figure 4) with a market size of RMB 2.296 billion, representing a year-on-year growth of 0.8%. This positions it as the second-largest subcategory, following sunscreen lotions and creams.

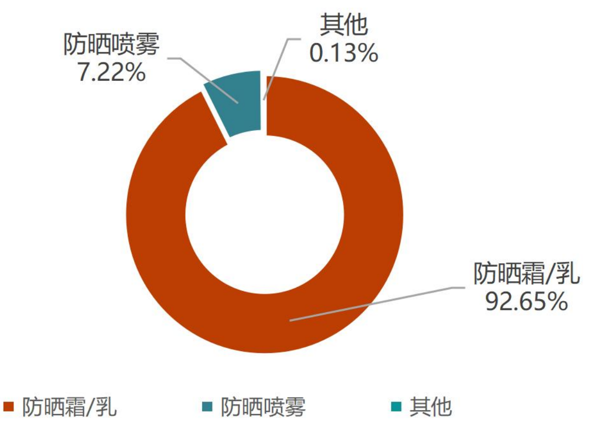


Figure 4 Market Share of Suncare Cosmetic Categories in 2023

The core growth drivers are as follows:

① Expansion of Usage Scenarios: Diverse scenarios such as outdoor sports, travel, and on-the-go touch-ups have created demand for instant UV protection.

② Superior Convenience: Compared to traditional topicals, spray formulations offer inherent advantages in terms of reapplication efficiency and ability to cover large body areas quickly.

③ Content E-Commerce Momentum: Short-video and live-streaming platforms, led by Douyin and Kuaishou, have been pivotal in the category's explosive growth. In 2023, the number of SKUs for suncare functional cosmetics on Kuaishou surged by 4,713.1%, with the market scale increasing by over 135 times year-on-year. This demonstrates the powerful role of channels in consumer education and market expansion.

Online channels dominate sales in China. According to the *Professional Suncare White Paper*, the combined GMV of suncare products on Taoxi (Taobao + Tmall) and Douyin reached RMB 12.409 billion in 2024 (see Figure 5), marking a year-on-year increase of 7.27%. Key channel characteristics include:

① Platform Differentiation: While Taoxi maintains a leading scale, content e-commerce platforms like Douyin have grown rapidly through a "content seeding + live-stream conversion" model. These platforms have become core battlegrounds for brands launching new products and engaging with younger consumer groups.

② Seasonal Fluctuations: Suncare sales exhibit a pronounced seasonal pattern, with peak demand occurring from March to August. The "618" Mid-Year Shopping Festival has surpassed "Double 11" as the most influential sales driver for suncare, aligning perfectly with peak summer protection needs.

Figure 5 GMV Distribution of Suncare Products on Two Major Platforms in 2024

The market is growing amid evolving consumer preferences and regulatory changes. Key growth drivers include increased demand for outdoor activities, widespread sun protection awareness, continuous product innovation, and a growing recognition of skin-related risks. Additionally, sustainable formulations and technological advancements are driving product innovation, enhancing both efficacy and consumer experience.

2.3.2.2 Competitive Landscape

The sunscreen spray market is highly competitive, characterized by significant brand concentration. The CR10 (concentration ratio of the top 10 brands) stands at 59.91%, indicating a market tilting toward leading players.

International brands continue to dominate the high-end market. Leveraging their long-standing brand reputation, robust R&D capabilities, and established consumer trust, brands such as Mistine and ANESSA consistently lead sales rankings (see Figure 6).

Figure 6 Sales Distribution of the TOP 10 Suncare Brands on Douyin (2024)

However, domestic brands have achieved a strong breakthrough, according to data from the *2025 China Cosmetics Yearbook*. Represented by Winona, Florasis, UNNY CLUB, Gaozi, Meikangfendai, and Liusimu, these homegrown brands have secured multiple spots in the TOP 20 sales rankings across various platforms. Their success stems from precise product positioning, agile marketing strategies, and rapid market responsiveness (see Tables 3, 4, 5, and 6). Particularly on content platforms like Douyin, domestic brands have achieved dual success in brand visibility and sales volume through KOL collaborations, short-video content seeding, and self-operated live-stream matrices, demonstrating superior adaptability and growth potential in the new retail landscape.

Table 3 Top 20 Sunscreen Brands on Taobao Platforms (Taobao + Tmall) in 2025

Sort	brand	Sales revenue (100 million yuan)	Country
1	Missing	5.58	Thailand
2	Anessa	4.72	Japan
3	L'Oréal	4.09	Europe and America
4	Lancôme	3.48	Europe and America
5	Winona	2.41	Domestic
6	SkinCeuticals	2.14	Europe and America
7	Proya	2.12	Domestic
8	Decorte	1.31	Japan
9	Shiseido	1.24	Japan
10	Clé de Peau Beauté	0.95	Japan
11	La Roche-Posay	0.74	Europe and America
12	Naris	0.68	Japan
13	Florasis	0.60	Domestic
14	Clarins	0.58	Europe and America
15	Meifubao	0.53	Domestic
16	Ifidan	0.53	Europe and America
17	Yu Xi	0.52	Domestic
18	UNNY CLUB	0.44	Domestic
19	Mentholatum	0.43	Europe and America
20	Meikang Fendai	0.43	Domestic

Table 4. Top 20 Sunscreen Brands on JD.com in 2025

Sort	brand	Sales revenue (100 million yuan)	Country
1	Anessa	2.76	Japan
2	L'Oréal	2.23	Europe and America
3	Lancôme	1.70	Europe and America

Sort	brand	Sales revenue (100 million yuan)	Country
4	Missing	1.51	Thailand
5	Proya	0.89	Domestic
6	Shiseido	0.81	Japan
7	Winona	0.79	Domestic
8	SkinCeuticals	0.52	Europe and America
9	Olay	0.49	Europe and America
10	Florasis	0.40	Domestic
11	Meifubao	0.29	Domestic
12	Isdin	0.23	Europe and America
13	Vitus	0.23	Domestic
14	Mentholatum	0.23	Europe and America
15	Naris	0.21	Japan
16	Han Shu	0.21	Domestic
17	Clarins	0.21	Europe and America
18	Da Bao	0.21	Europe and America
19	High-quality	0.20	Domestic
20	Biore	0.19	Japan

Table 5. Top 20 Sunscreen Brands on Douyin Platform in 2025

Sort	brand	Sales revenue (100 million yuan)	Country
1	Missing	6.87	Thailand
2	Anessa	3.33	Japan
3	L'Oréal	3.30	Europe and America
4	Meikang Fendai	3.14	Domestic
5	BABI	2.21	Domestic
6	Yalijie	2.20	Domestic
7	Willow wood	1.96	Domestic
8	Florasis	1.79	Domestic
9	Proya	1.38	Domestic
10	UNNY CLUB	1.26	Domestic
11	Ifidan	1.25	France
12	Lancôme	1.01	Europe and America
13	La Roche-Posay	1.00	Europe and America
14	Yu Xi	0.98	Domestic
15	Aussie Mo	0.98	Australia
16	NUINUI	0.87	Taiwan, China
17	camel	0.80	Domestic
18	High posture	0.72	Domestic
19	Meifubao	0.71	Domestic
20	Naris	0.60	Japan

Table 6. Top 20 Sunscreen Brands on Kuaishou Platform in 2025

Sort	brand	Sales revenue (100 million yuan)	Country
1	Missing	1.20	Thailand
2	Anessa	2.76	Japan
3	Willow wood	0.32	Domestic
4	AHC	0.21	South Korea
5	Mi Yan Zhe	0.16	Domestic
6	eternal beauty	0.15	Domestic
7	Han Xizhen	0.13	Domestic
8	Baifuyuan	0.13	Domestic
9	Impressions of Jiangnan	0.12	Domestic
10	European and American lotus	0.12	Domestic
11	Dora Doshang	0.11	Domestic
12	Derezhe	0.11	Domestic
13	Yi Rong Skin Beauty	0.11	Domestic
14	Berlan Dream	0.11	Domestic
15	Kellogg	0.11	Domestic
16	Leaning back	0.11	Domestic
17	ANGEYI	0.10	Domestic
18	Fubiya	0.10	Domestic
19	Meikang Fendai	0.10	Domestic
20	PVPV	0.09	Domestic

Data from the 2025 China Cosmetics Yearbook shows significant differences in the channel share and growth rate of suncare cosmetics across major e-commerce platforms in 2025: JD.com and Kuaishou led in market share, accounting for 3.8% and 5.2% respectively; Taoxi (Tmall + Taobao) accounted for 3.0%, Douyin for 2.1%, and Pinduoduo for 1.2%, with relatively low shares. In terms of growth rate, Kuaishou achieved explosive growth with a year-on-year increase of 143.8%, while Pinduoduo, JD.com and Douyin also maintained a growth rate of 2.8% or above. Taoxi had the lowest growth rate (1.4%), and Kuaishou had the strongest growth momentum in the overall channel pattern.

2025天猫+淘宝渠道主要功效化妆品销售情况

功效	市场份额	销售额同比
抗肌肤老化	40.7%	30.8%
舒缓修护	51.7%	126.2%
美白祛斑	7.0%	-22.5%
补水保湿	58.1%	133.0%
控油祛痘	13.5%	167.2%
防晒	3.0%	1.4%
防脱	0.8%	-31.8%

数据说明:
1.数据来源：青眼情报
2.依照《化妆品监督管理条例》的定义，不包含美容仪
3.统计范围：天猫+淘宝渠道
4.统计口径：按照退后实收销售额口径统计
5.市场份额=该功效或品类或品牌在天猫+淘宝渠道的销售额/天猫+淘宝渠道化妆品整体规模
6.数据时间：2025年

(a)

2025抖音渠道主要功效化妆品销售情况

功效	市场份额	销售额同比
抗肌肤老化	36.8%	28.2%
舒缓修护	24.0%	36.0%
补水保湿	17.9%	20.3%
美白祛斑	13.1%	38.3%
控油祛痘	2.3%	3.0%
防晒	2.1%	2.8%
防脱	1.5%	10.0%

数据说明:
1.数据来源：青眼情报
2.依照《化妆品监督管理条例》的定义，不包含美容仪
3.统计范围：抖音
4.统计口径：按照GMV口径统计
5.市场份额=该功效或品类或品牌在抖音的销售额/抖音化妆品整体规模
6.因为存在复合功效化妆品，故而各功效化妆品销售额总额不等于化妆品整体市场份额
7.数据时间：2025年

(b)

2025拼多多主要功效化妆品销售情况

功效	市场份额	销售额同比
抗肌肤老化	39.7%	21.7%
补水保湿	30.2%	39.3%
舒缓修护	20.3%	36.5%
美白祛斑	12.7%	43.8%
控油祛痘	5.8%	7.6%
防脱	1.9%	4.8%
防晒	1.2%	30.5%

数据说明:
1.数据来源：青眼情报
2.依照《化妆品监督管理条例》的定义，不包含美容仪
3.统计范围：拼多多
4.统计口径：按照GMV口径统计
5.市场份额=该功效或品类或品牌在拼多多的销售额/拼多多化妆品整体规模
6.因为存在复合功效化妆品，故而各功效化妆品销售额总额不等于化妆品整体市场份额
7.数据时间：2025年

(c)

2025快手主要功效化妆品销售情况

功效	市场份额	销售额同比
控油祛痘	2.4%	34.3%
防晒	5.2%	143.8%
防脱	3.2%	77.9%

数据说明:
1.数据来源：青眼情报
2.依照《化妆品监督管理条例》的定义，不包含美容仪
3.统计范围：快手
4.统计口径：按照GMV口径统计
5.因为存在复合功效化妆品，故而各功效化妆品销售额总额不等于化妆品整体市场份额
6.市场份额=该功效或品类或品牌在快手渠道的销售额/快手渠道化妆品整体规模
7.数据时间：2025年

(a)

2025京东主要功效化妆品销售情况

功效	市场份额	销售额同比
防晒	3.8%	3.1%
控油祛痘	2.5%	5.9%
防脱	1.0%	9.7%

数据说明:
1.数据来源：青眼情报
2.依照《化妆品监督管理条例》的定义，不包含美容仪
3.统计范围：京东
4.统计口径：按照GMV口径统计
5.市场份额=该功效或品类或品牌在京东的销售额/京东化妆品整体规模
6.因为存在复合功效化妆品，故而各功效化妆品销售额总额不等于化妆品整体市场份额
7.数据时间：2025年

(b)

Figure 7 Sales Performance of Suncare Cosmetics on Various Sales Platforms in 2025

2.3.2.3 New Sun Protection Trends

In 2025, the suncare market is evolving toward year-round availability, scenario-based customization, technological innovation, and functional enhancement. The competitive focus of sunscreen sprays has shifted from pure price wars to a comprehensive battle of efficacy + experience + scenario. Skin-nourishing formulas, high-protection sunscreens, and sports-specific products have emerged as key differentiation directions. Consumers are no longer satisfied with single-function sun protection; instead, they seek an integrated experience featuring high-level protection, superior skin feel, multi-effect unification, safety, and mildness. Domestic brands have demonstrated exceptional performance on new channels such as Douyin, and technological innovation and ingredient R&D have become the core drivers of brand competition. Segmented markets including infants/children, men, and teenagers still hold substantial growth potential, while scenarios such as outdoor activities, travel photography, and daily commuting are driving further product segmentation and professionalization.

In addition, the integration of makeup and skincare is set to become a major new trend in the 2026 suncare market. Products such as sunscreen primers and sunscreen foundations with brightening, soft-focus, and pore-refining functions are gaining traction, simplifying makeup steps and enhancing user satisfaction. Portable and sweat-resistant products targeting makeup touch-up scenarios are also popular; matte sunscreen sticks and setting spray-type sunscreens have become new favorites. With user-friendly designs, these products enable effortless refreshment touch-ups even with makeup on, making them particularly suitable for humid climates.

2.3.3 Filing Quantity and Trend of Suncare Cosmetics and Sunscreen Sprays

2.3.3.1 Market Scale and Trend

The suncare market remains highly active. From 2023 to 2024, the total number of filings for suncare products increased by 60% year-on-year, with new product entrants intensifying market competition and innovation. As a rising star in the suncare category, the filing proportion of sunscreen sprays has continued to rise—from 11.6% in 2022 to 13.4% in 2023, reflecting strong market growth momentum.

In terms of protection levels, PA+++ remains the mainstream configuration in the current sunscreen spray market, meeting the basic protection needs of most consumers. However, with consumers' growing awareness of the tanning and aging risks caused by long-wave ultraviolet (UVA) radiation and the increasing demand for high-intensity outdoor protection scenarios, the filing scale of products with higher

PA++++ levels is gradually expanding, representing the future direction of technological upgrading.

From 2023 to 2025, the total number of filings for sunscreen cosmetics amounted to 8,697. In 2023, there were 2,040 filings, accounting for 23.46% of the three-year total. In 2024, filings reached 3,535, representing 40.65% of the three-year total, a year-on-year increase of 73.3%. In 2025, filings totaled 3,122, comprising 35.9% of the three-year total, a year-on-year decrease of 11.7%, yet still exceeding the 2023 level.

According to data provided by the Xiangshan Cosmetics Industry Research Institute, sunscreen spray filings during the period 2023-2025 accounted for 10.36% of all sunscreen product filings, totaling 903 filings. In 2023, 191 sunscreen spray product filings were completed, accounting for 21.2% of the three-year total. In 2024, 421 sunscreen spray product filings were completed, representing 46.6% of the three-year total, with a growth rate of 120.4%, making it the most active year in the market. In 2025, 291 sunscreen spray product filings were completed, comprising 32.2% of the three-year total, a decrease of 30.9% compared to 2024. This decline is likely associated with intensified market competition and adjustments in regulatory policies, although it still remained above the 2023 level.

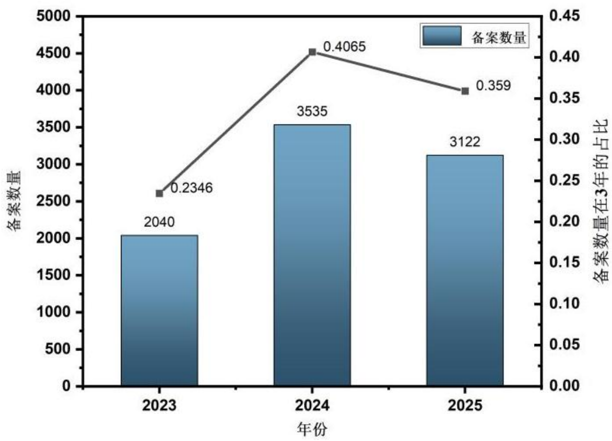


Figure 8 Number of Filings for Suncare Cosmetics by Year (2023–2025)

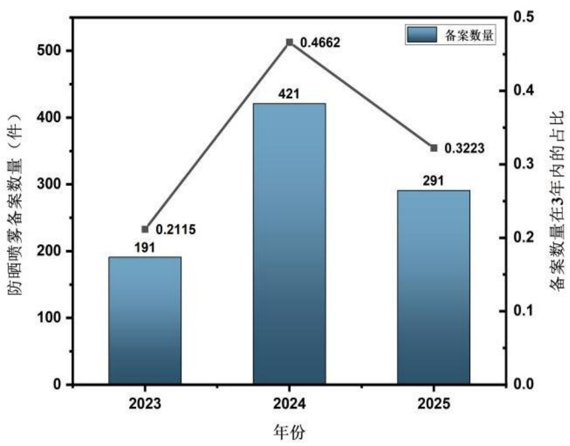


Figure 9 Number of Filings for Sunscreen Sprays by Year (2023–2025)

Table 7 Annual Filing Data Statistics of Sunscreen Sprays

Year	Number of Filings	Proportion of Total (3 Years)	Number of Involved Provinces	Number of Involved Cities
2023	191 items	21.2%	7	13
2024	421 items	46.6%	7	19
2025	291 items	32.2%	7	18 pcs
total	903 items	100.0%	10	26

2.3.3.2 Highly Concentrated Production Locations

The table below shows the top 5 provinces for suncare cosmetics production (2023–2025), including filing quantities and their proportions. Data reveals Guangdong Province's continuously strengthening dominance: its filings increased from 1,004 to 2,011 over three years, with its proportion rising from 49.2% to 64.4%, making it the most production-concentrated province. In 2025, production of suncare cosmetics was concentrated in the Pearl River Delta and Yangtze River Delta regions, with 1,128 filings in Guangzhou, 286 in Zhongshan, 246 in Shanghai, 98 in Suzhou, and 53 in Hangzhou. Overall, production of suncare cosmetics is highly concentrated in Guangdong Province, with domestic production gradually replacing foreign shares.

Table 8 Top 5 Provinces in Suncare Cosmetics Production (2023–2025)

Province	2023 Filings (Proportion)	2024 Filings (Proportion)	2025 Filings (Proportion)
Guangdong Province	1004 items (49.2%)	2145 items (60.7%)	2011 items (64.4%)
foreign	561 items (27.5%)	702 items (19.9%)	520 items (16.7%)
Shanghai	216 items (10.6%)	293 items (8.3%)	246 items (7.9%)
Jiangsu Province	104 items (5.1%)	172 items (4.9%)	171 items (5.5%)
Zhejiang Province	35 items (1.7%)	83 items (2.3%)	71 items (2.3%)

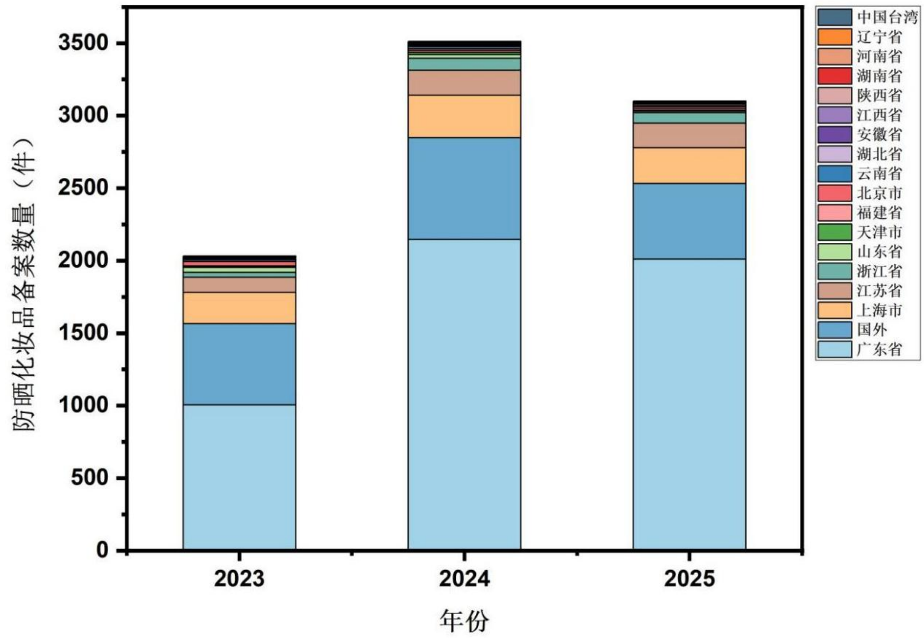
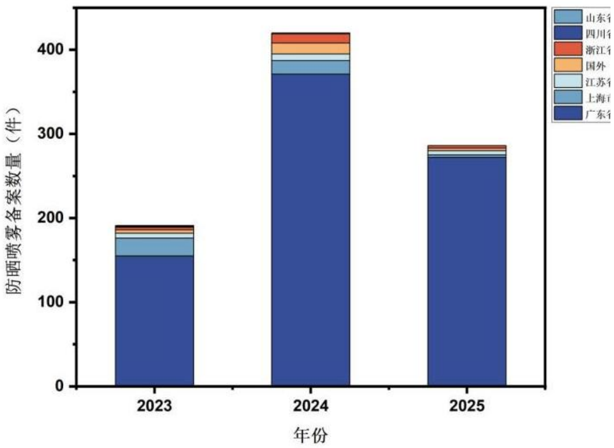


Figure 10 Distribution of Filings for Suncare Cosmetics by Province (2023–2025)

Furthermore, the production of sunscreen sprays within the sunscreen cosmetics category is also highly concentrated by province. Guangdong Province holds an absolutely dominant position, with a production concentration of 88.4% (798 filings), far surpassing other provinces and forming a distinct industrial cluster. The top two provinces (Guangdong and Shanghai) together account for 92.8%. The production of sunscreen sprays is notably concentrated in specific cities, primarily in the Pearl River Delta region, with the top four cities all located in Guangdong Province. Among them, Guangzhou is the largest producing city nationwide, accounting for 38.1%, and the top ten cities (mainly located in Guangdong) collectively account for 91.9%.

Table 9 Distribution of Top 5 Cities

Ranking	City	Province	Filings	Proportion
1	Guangzhou	Guangdong	344 items	38.1%
2	Huizhou City	Guangdong	147 items	16.3%
3	Qingyuan City	Guangdong	108 items	12.0%
4	Zhongshan City	Guangdong	93 items	10.3%
5	Shanghai	Shanghai	40 items	4.4%



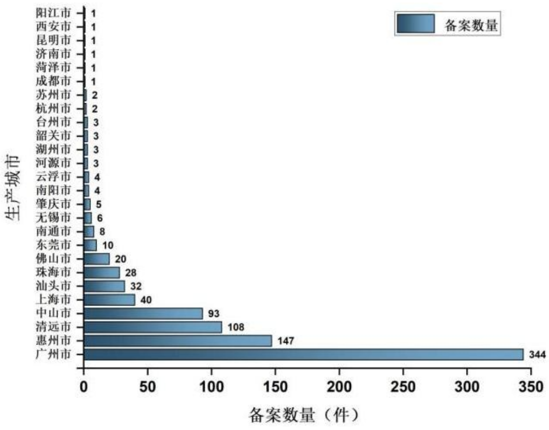


Figure 11 Distribution of Filings for Sunscreen Sprays by Province (2023–2025)

Figure 12 Number of Filings for Sunscreen Sprays by City (2023–2025)

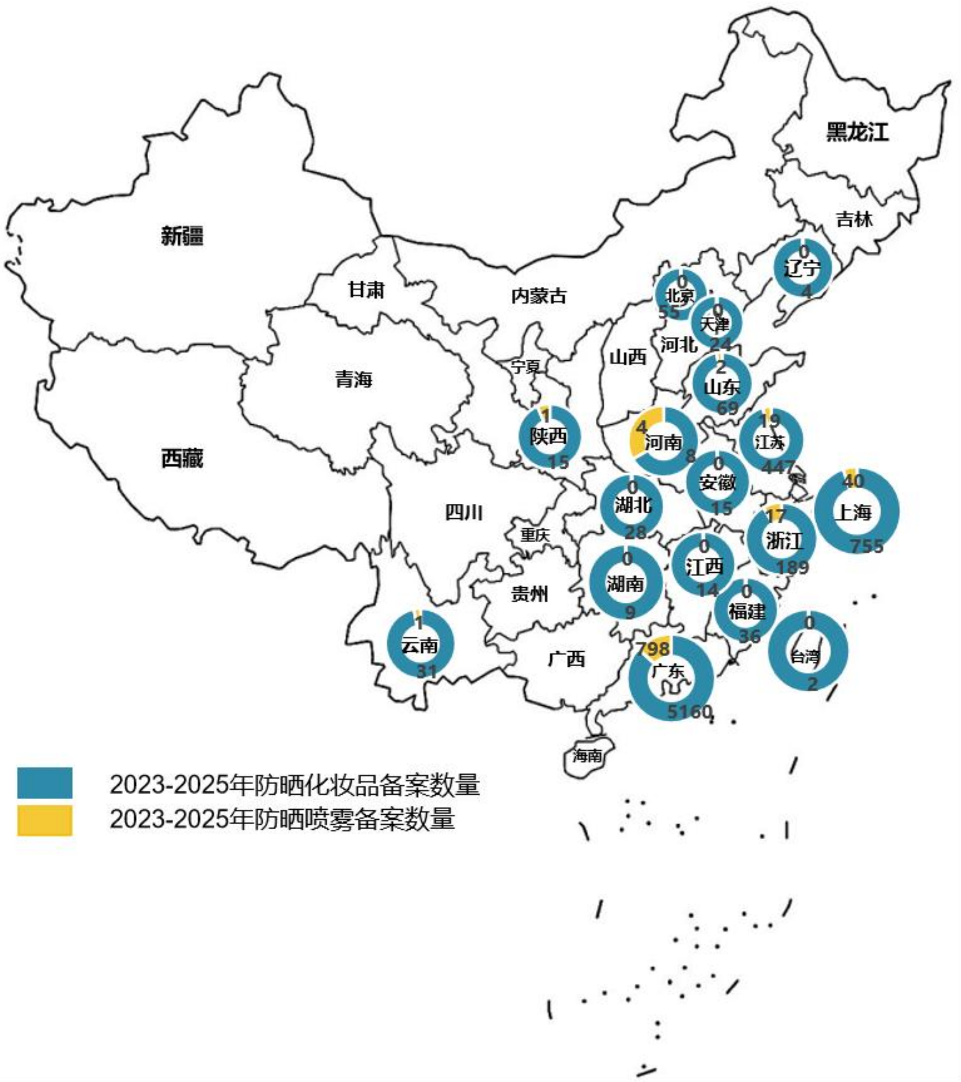


Figure 13 Distribution of China’s Suncare Cosmetics and Sunscreen Sprays (2023–2025)

2.3.3.3 Year-by-Year Evolution Trend

2.3.3.3.1 Filing Quantity Trend

The filing of suncare cosmetics has experienced a period of rapid growth (2023-2024) and an adjustment period (2024-2025). During the rapid growth period, the number of filings for suncare cosmetics increased from 2,040 to 3,535, with a growth rate of 73.3%, reflecting the rapid rise in market demand for suncare cosmetics. During the adjustment period, the number of filings for suncare cosmetics decreased slightly by 11.7%, which should be related to the intensification of market competition and the adjustment of regulatory policies.

2.3.3.3.2 Production Concentration Trend

Guangdong Province's dominant position has gradually strengthened. The proportion of filings for suncare cosmetics increased from 49.2% in 2023 to 64.4% in 2025, indicating that the industry is concentrating in the Pearl River Delta region. At the same time, there is a phenomenon of unbalanced regional development: the top 4 production provinces (Guangdong, Shanghai, Jiangsu and Zhejiang) account for more than 75%, while the share of other regions is relatively small.

The production concentration of sunscreen sprays in Guangdong Province shows an upward trend. The proportion of sunscreen sprays produced in Guangdong Province increased year by year from 81.2% in 2023 to 93.5% in 2025, and the number of involved cities increased from 13 in 2023 to 18 in 2025, indicating that the industrial layout has expanded. The sunscreen spray market is also gradually maturing. From 2023 to 2025, sunscreen sprays accounted for 10.36% of all suncare products, making it an important segmented category.

2.3.3.4 Core Conclusions

From 2023 to 2025, the registration and filing of sunscreen sprays reached a peak in 2024 and then slightly declined. The production layout presents an obvious characteristic of "Guangdong-led and Pearl River Delta agglomeration", with increasing concentration. Market activity is significantly affected by consumer demand and policy environment.

2.4 In-depth Consumer Insight

2.4.1 Portrait of Core Consumer Groups

2.4.1.1 Gender and Age Structure

Females are still the main body of sun protection consumption (see Figure 14), but in the suncare category, the consumption potential of males is seriously underestimated and is being released rapidly. Research shows that the TGI index of male consumers in the suncare category is as high as 308.78%, far exceeding their attention to other cosmetics, making it a high-potential market to be explored.

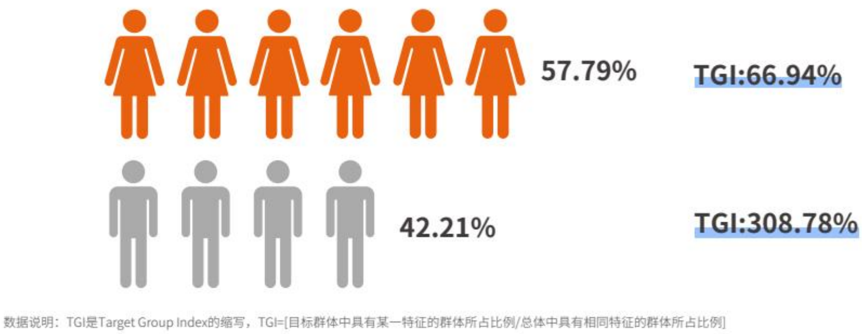


Figure 14 Gender Distribution of Suncare Product Consumers

Data from the *2025 China Suncare Market New Trend Insight Report* shows that in terms of age groups, urban young people aged 25-34 are the absolute main consumer force, accounting for 51.79%. They are economically independent and have mature skin care awareness. At the same time, the sun protection awareness of the Z-generation group aged 18-24 is rapidly awakening, accounting for 14.81%, which is the key to future market growth.

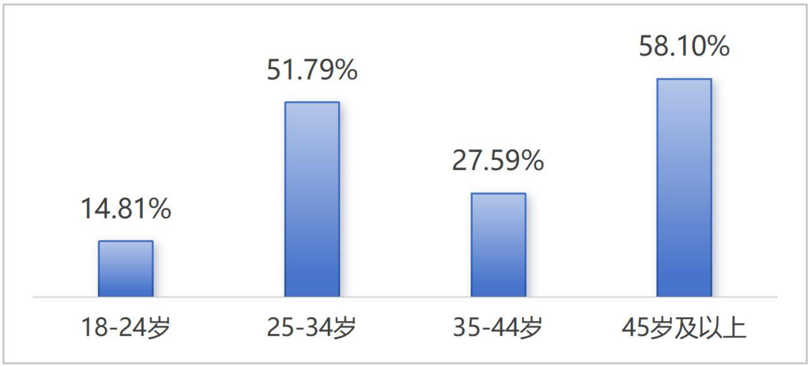


Figure 15 Age Distribution of Suncare Product Consumers

2.4.1.2 Skin Type and Special Needs

Data shows that people with sensitive skin have become important users of suncare products, accounting for more than 60%. This group of consumers has almost harsh requirements on the safety, mildness and low irritation of product ingredients. In addition, consumers with oily and combination skin account for more than 65%, and they strongly pursue the refreshing degree and oil control ability of products.

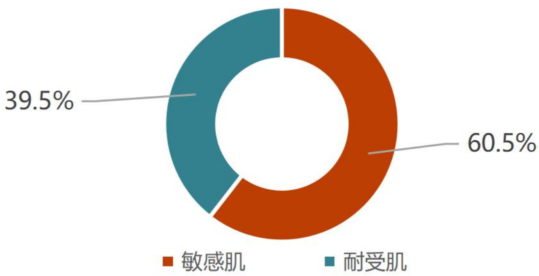


Figure 16 Skin Condition Distribution of Suncare Product Consumers

2.4.2 Consumer Behavior and Usage Habits

2.4.2.1 Daily Sun Protection Awareness, but Shortcomings in Behavior

Data from Qingyan Intelligence shows that about 38.82% of consumers have developed the habit of using sun protection daily, which is a significant improvement compared with a few years ago. However, scientific sun protection behavior has not yet been fully popularized:

① Insufficient dosage: 28.27% of consumers admit that the dosage is less than the recommended standard, which directly affects the protection effect.

② Low touch-up rate: Only 42.69% of consumers can touch up every 2 hours during outdoor activities, and nearly 12.58% of consumers basically do not touch up, leading to "protection gaps".

③ Residual seasonal concept: A considerable proportion of consumers still use sun protection only in summer or during outdoor activities, and have weak awareness of protecting against ultraviolet rays in autumn, winter and cloudy days.

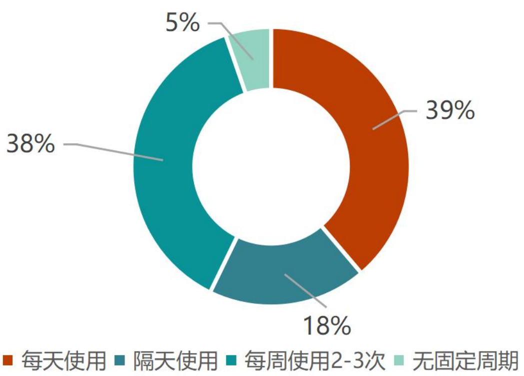


Figure 17 Frequency of Consumers Using Suncare Cosmetics

2.4.2.2 Scenario-Driven Purchase Decisions

Relevant data shows that the core scenarios for consumers to use sunscreen are highly concentrated in "outdoor activities", accounting for 88.19%. Among them, hiking/mountain climbing, seaside/beach, and outdoor sports are the three high-frequency scenarios. This has directly spawned strong market demand for high-performance, professional outdoor sunscreen products.

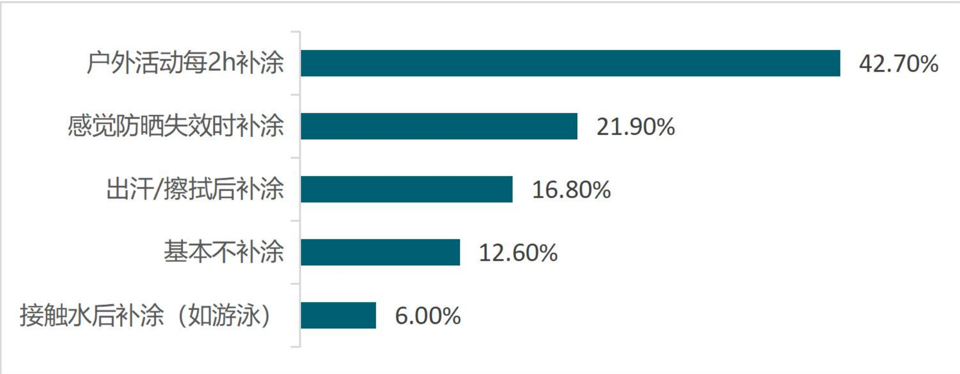


Figure 18 Proportion of Consumer Sunscreen Reapplication Scenarios

2.4.3 Purchase Decision Factors and Pain Points

2.4.3.1 Core Decision Factors

When choosing sunscreen sprays, the two factors with the highest decision-making weight for consumers are "protective effect" (84.3% pay attention to SPF/PA values) and "product safety" (82.1%). This reflects that while pursuing high-efficiency protection, consumers adhere to the bottom line of health and safety.

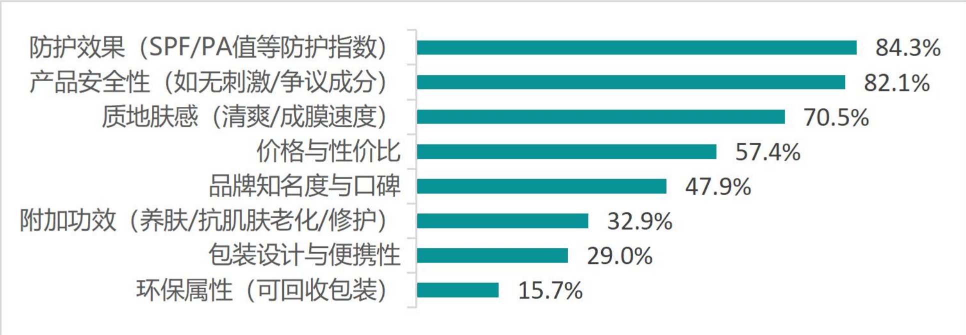


Figure 19 Consumer Concerns When Purchasing Sunscreen Cosmetics

2.4.3.2 Specific Preferences for Sunscreen Sprays

Consumers favor sunscreen sprays mainly based on three major advantages: convenient use (suitable for quick reapplication and body spraying), refreshing skin feel (usually lighter texture), and no damage to makeup (easy to re-spray after setting makeup).

2.4.3.3 Main Pain Points of Existing Products

Relevant data shows that sunscreen sprays on the current market are far from perfect, and consumer complaints are concentrated in the following aspects:

① Thick and greasy skin feel (69.33%): Contradicts the expected "refreshing" effect;

② Poor protection durability / not water-resistant and sweat-resistant (63.33%): Protection ability drops rapidly after sweating or contact with water;

③ Slow film formation and easy rubbing (35.67%): Affects user experience and subsequent makeup application;

④ Safety concerns: Worries about the irritation and potential risks of some chemical sunscreen ingredients.

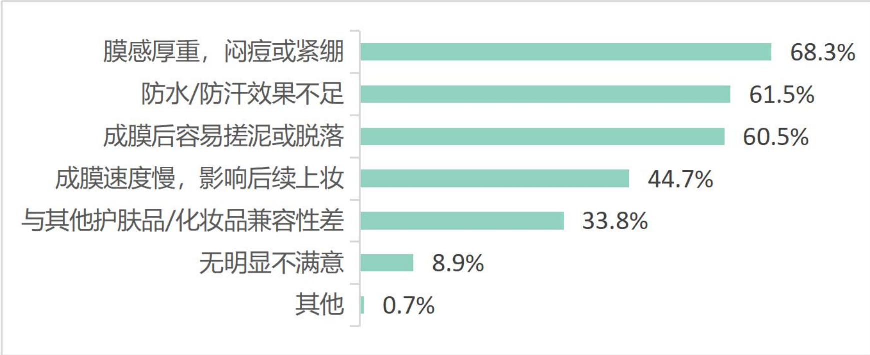


Figure 20 Reasons for Consumers' Dissatisfaction with the Film-Forming Effect of Sunscreen Products

2.4.4 Common Cognitive Misconceptions Urgently Need Correction

Consumers still have widespread misconceptions about sunscreen, which affect their scientific selection and effective use:

Misconception 1: High SPF value = high sunscreen effect. In fact, SPF50 blocks about 98% of UVB rays, while SPF30 blocks about 96%, with only a 2% difference in actual protection. Blindly pursuing excessively high SPF values is of little significance and may even increase the burden on skin feel.

Misconception 2: Sunscreen sprays are more irritating. Irritation depends on formula ingredients, not the dosage form itself. By choosing alcohol-free, fragrance-free formulas containing soothing ingredients, sensitive skin can also find suitable sunscreen sprays.

Misconception 3: Water-resistant sunscreen does not need reapplication. Even products labeled as water-resistant will fail due to friction, wiping and sweat washing, and the principle of reapplication every 2 hours must be adhered to.

Misconception 4: Sunscreen does not require makeup removal. Water-resistant film-forming sunscreen sprays must be cleaned with special makeup removers; otherwise, residues may clog pores and cause skin problems.

2.5 Industrial Chain Structure Analysis

2.5.1 Upstream

The upstream industry includes suppliers of sunscreen raw materials (chemical sunscreens, physical sunscreens, biological sunscreens), propellants, and packaging materials (aluminum cans, tinplate cans, pump heads, valves, outer caps). Dominated by international chemical giants, BASF, DSM, Croda, etc., occupy the main market share.

2.5.2 Midstream

The midstream industry mainly involves R&D design and production and manufacturing links.

2.5.3 Downstream

The downstream industry mainly corresponds to brand operation and channel sales. International brands (Shiseido, L'Oréal, Avène, etc.) and domestic brands (Meifubao, Proya, Winona, etc.) compete fiercely, and emerging brands enter through segmented tracks.

Table 10 Main Classifications of Industrial Chain Structure

Link	Main content	Representative companies/institutions
Upstream	Raw materials (sunscreens, emulsifiers, propellants, packaging materials, etc.)	BASF, Symrise
Midstream	Production and manufacturing (ODM/OEM)	Zhongshan Tiantu, Cosmax, Norsbel
Downstream	Brand operation and channel sales	Anessa, Nivea, Florasis, Proya

3 Core Technology Analysis

3.1 Sunscreen Principles and Key Ingredients

3.1.1 Sunscreen Principles

1. Chemical sunscreen: Absorbs ultraviolet rays and converts them into heat energy or harmless wavelengths for release;
2. Physical sunscreen: Reflects and scatters ultraviolet rays, mainly titanium dioxide and zinc oxide;
3. Biological sunscreen: Reduces ultraviolet damage through biological activities such as antioxidation and anti-inflammation.

3.1.2 Key Ingredient Trends (2025)

Table 11 Key Sunscreen Ingredient Trends in 2025

Ingredient Type	Representative Ingredients	Characteristics	Application Trend
Typical Chemical Sunscreens	Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine, Methylene Bis-Benzotriazolyl Tetramethylbutylphenol	Good photostability, broad-spectrum protection	Mainstream choice, used in combination
Nano Physical Sunscreens	Nano Titanium Dioxide, Nano Zinc Oxide	Light skin feel, high transparency	Rapid growth, used in high SPF products
Bioactive Ingredients	Ergothioneine, Ectoine, Antioxidant Plant Extracts	Antioxidant, repairs photodamage	Standard configuration for high-end products, driven by anti-aging demand
Environmentally Friendly and Safe Ingredients	Ocean-Friendly Sunscreens (free of oxybenzone, cinnamates)	Environmentally friendly, biodegradable	Regulation-driven, consumer concern

3.2 Technical Difficulties and Solutions

3.2.1 Difficulty 1: Spray Uniformity and Coverage

The following solutions are adopted:

1. Optimize valve design to control spray particle size (ideal range: 15-50 microns);
2. Improve formula rheology, adjust viscosity and surface tension;
3. Use special propellant combinations to improve atomization effect.

3.2.2 Difficulty 2: Flammability of Propellants

The following solutions are adopted:

1. Dual-chamber packaging technology: Adopt inner bag separation design to avoid direct contact between contents and propellants, improving stability and safety;
2. Replacement of environmentally friendly propellants: Use propellants with low GWP values to comply with global environmental protection trends.

3.2.3 Difficulty 3: Usage Safety and Inhalation Risks

The following solutions are adopted:

1. Design directional nozzles to control spray direction;
2. Use quantitative valves to accurately control the amount of sunscreen spray emitted each time;
3. Develop low-volatility formulas to reduce suspended particles in the air;
4. Add mild ingredients to reduce inhalation irritation;
5. Combine the spray form of the product to design the sunscreen formula into formula systems such as sunscreen mousse and sunscreen bubble ice.

3.3 Intelligent Sunscreen Technology

In 2025, intelligent sunscreen technology has become an innovation hotspot:

1. Ultraviolet sensing technology: A UV sensor built into the bottle cap to monitor UV intensity in real time;
2. Photostability enhancement technology: New photostabilizers extend protection time by 40%;
3. Microcapsule sustained-release technology: Realizes continuous release of sunscreens and extends effective protection.

3.4 Green and Sustainable Technology

Environmental protection has become an important direction of technology development:

1. Environmentally friendly propellants: Compressed air and nitrogen replace traditional hydrocarbon propellants;
2. Recyclable packaging: Single-material packaging, easy-separation design;
3. Ocean-friendly formulas: Free of ingredients harmful to coral reefs;
4. Add recycling guidelines to product labels;
5. Promote the establishment and improvement of green product evaluation systems.

4 Compliance and EHS Management System

4.1 Domestic and Foreign Regulatory and Standard Systems

4.1.1 Chinese Regulatory System

Regulations on the Supervision and Administration of Cosmetics (implemented in 2021) and supporting regulations

Safety Technical Specifications for Cosmetics (2015 Edition)

Registration/filing management requirements for sunscreen cosmetics

Relevant standards for aerosol products: GB/T 14449, etc.

Chinese sunscreen sprays must comply with the Regulations on the Supervision and Administration of Cosmetics, the Safety Technical Specifications for Cosmetics, etc., and refer to international standards such as the EU SCCS and the US FDA.

The group standards T/GDCA 019 Sunscreen Spray (released in 2023) and T/CPF 0119 Sunscreen Aerosol (released in 2025), led by Zhongshan Tiantu Fine Chemicals Co., Ltd., have provided clear technical specifications for the industry and are steadily promoting the establishment of national standards.

4.1.2 Major International Regulations

EU: Cosmetics Regulation (EC) No 1223/2009, REACH Regulation

US: FDA OTC drug management (some sunscreens are managed as drugs)

Japan: Pharmaceutical Affairs Law, Cosmetics Standards

South Korea: Cosmetics Act, regulations of the Ministry of Food and Drug Safety of South Korea

4.2 EHS Requirements in the Production Link

4.2.1 Environment

Control of volatile organic compounds (VOC) emissions;

Safety of propellant storage and use;

Treatment and recycling of waste aerosols.

4.2.2 Health

Occupational health protection for employees (exposure to organic solvents and dust);

Clean production to reduce the use of harmful substances;

Good ventilation and personal protective equipment.

4.2.3 Safety

Safety management of pressure vessels (aerosol can filling);

Management of flammable and explosive chemicals (propellants, organic solvents);

Fire prevention and explosion-proof facilities and emergency plans.

4.3 Product Compliance Testing Requirements

As a special cosmetic, sunscreen sprays must complete various tests such as physicochemical indicators, toxicology, microbiological testing, and efficacy testing before being launched on the market, then submit an application for approval to the national authority, and obtain a special certificate before arranging production and marketing.

Table 12 Testing Items for Sunscreen Sprays

Testing Category	Testing Items	Applicable Standards
Physicochemical Index Testing	pH value, prohibited/restricted substances, sunscreen agent content, heat/cold resistance, etc.	GB/T 14449 T/GDCA 019 T/CPF 0118
Toxicological Tests	Skin irritation, skin sensitization, skin phototoxicity test, human skin patch test	Safety Technical Specifications for Cosmetics
Microbiological Testing	Total number of bacterial colonies, total number of molds and yeasts, heat-resistant coliforms, Staphylococcus aureus, Pseudomonas aeruginosa detection, etc.	Safety Technical Specifications for Cosmetics

Testing Category	Testing Items	Applicable Standards
Efficacy Testing	Sun Protection Factor (SPF) determination, Persistent Pigment Darkening (PPD) value determination, water resistance testing, and other items required for efficacy claims	Regulations on the Evaluation of Cosmetic Efficacy Claims

Zhongshan Tiantu Fine Chemicals Co., Ltd. possesses comprehensive testing capabilities and compliant processes, holding the only CNAS certification in the aerosol industry. It provides one-stop compliance solutions for customers.

5 Market Competitive Landscape

5.1 Competitive Landscape Analysis

5.1.1 Market Concentration

In 2025, the CR10 (market share of the top 10 brands) of China's sunscreen spray market reached 59.91%, indicating a relatively high market concentration. However, long-tail brands still have opportunities to gain a foothold through segmented tracks.

China's sunscreen spray ODM market presents a pattern of "one dominant player and multiple strong competitors". Zhongshan Tiantu Fine Chemicals Co., Ltd., renowned for its profound technical accumulation, full-industry-chain service capabilities, and participation in standard-setting, is hailed as the "No.1 ODM Enterprise for Spray Cosmetics in China".

5.1.2 International Brands

Brands such as Mentholatum, Shiseido (ANESSA), L'Oréal (La Roche-Posay, Garnier), Avène, Bioderma, and Naris (Japan) still dominate the high-end market despite facing challenges from emerging brands. Occupying the premium price segment of over RMB 200, these international brands maintain sales advantages on Tmall, leveraging strong brand recognition, technical accumulation, and brand influence to solidify their position in the high-end market.

5.1.3 Domestic Head Brands

Leading domestic brands including Meifubao, Proya, Winona, and CHANDO have not yet formed a monopolistic advantage. They are evolving dynamically in the market, achieving rapid growth through high cost-performance ratios and localized marketing strategies.

5.1.4 Emerging Brands

Represented by babi and Camel, emerging brands have seized significant market share. Focusing on the golden price segment of RMB 50–100, these brands leverage Douyin as their core promotional platform and have risen rapidly through "efficacy claim communication" and "precision scenario-based marketing".

5.2 Challenges and Development Trends

5.2.1 Current Industry Challenges

5.2.1.1 Technical Challenges

The balance between high SPF values and lightweight skin feel;

The contradiction between the safety and efficacy of chemical sunscreen agents;

Conflicts between environmental requirements for propellants and cost pressures;

Compatibility between intelligent functions and product stability.

5.2.1.2 Market Challenges

Severe product homogeneity and fierce price competition;

Insufficient consumer education and widespread misuse (e.g., insufficient application amount, lack of reapplication);

Channel fragmentation, requiring strong omni-channel operational capabilities;

Price reductions by international brands squeezing the market space of domestic brands.

5.2.1.3 Regulatory Challenges

Differences between domestic and foreign regulations, leading to high export thresholds;

Frequent introduction of new regulations, increasing compliance costs;

Stricter supervision on efficacy claims, limiting marketing space;

Rising environmental requirements, imposing pressure on technological upgrades.

5.2.2 Future Development Trends

5.2.2.1 Technological Trends

Personalized Customized Sunscreen: AI-based skin detection for formula customization, with an expected market size of RMB 5 billion by 2027;

Breakthroughs in Bio-Sunscreen Agents: Application ratio of plant extracts and microbial fermentation products will reach 30%;

Electronic Technology: Electrostatic atomization and ultrasonic atomization technologies applied in high-end products;

Intelligent Interaction Upgrade: Linkage with wearable devices to realize intelligent reapplication reminders.

5.2.2.2 Market Trends

Ultimate Scenario Segmentation: Emergence of professional products such as ski sunscreen, high-altitude sunscreen, and desert sunscreen;

Brand Pattern Reshaping: Emerging brands challenging international brands through segmented tracks;

Omni-Channel Integration: Offline experience, online purchase, and instant delivery becoming the mainstream;

Increased Cross-Border Cooperation: Cosmetic brands co-branding with outdoor and sports brands.

5.2.2.3 Consumer Trends

Integration of Sunscreen and Skincare: Sunscreen becoming the final step of skincare, integrated with serums and lotions;

Family Sunscreen Solutions: Growth of set products tailored to the needs of different family members;

Deepened Sustainable Consumption: Carbon footprint labels and empty bottle recycling programs influencing purchasing decisions;

Highlighted Experience Value: Shifting from functional consumption to experience consumption, emphasizing the ritual of use.

6 Conclusions, Recommendations, and Future Trend Outlook

6.1 Core Conclusions

1. The sunscreen spray market has transitioned from a phase of scale expansion to one of value exploration. The market size is projected to reach RMB 35 billion in 2026, with technology-driven growth replacing traffic-driven growth as the primary engine.
2. A tripartite transformation in technology, market, and regulation is reshaping the industry: smart sunscreen technologies are creating new demand, a diversifying consumer base is expanding market boundaries, and stricter regulations are phasing out outdated production capacity.
3. Industry concentration will further increase. Leading companies and professional ODM service providers equipped with technological R&D, compliance management, and omnichannel operational capabilities are poised to capture a larger market share.

6.2 Enterprise Recommendations

6.2.1 Recommendations for Brand Owners

Focus on Segmented Tracks: Avoid homogeneous competition and deepen engagement in specific user groups or scenarios;

Increase R&D Investment: Allocate 8–10% of revenue to R&D, focusing on intelligent and green technologies;

Build Omni-Channel Capabilities: Especially layout instant retail channels and enhance private domain operational capabilities;

Strengthen Consumer Education: Popularize correct usage methods to improve product effectiveness and user satisfaction.

6.2.2 Recommendations for Channel Partners

Scenario-Based Display: Display sunscreen sprays in association with outdoor equipment and travel supplies;

Experiential Marketing: Set up trial areas to demonstrate correct usage and intelligent functions;

Content Marketing Cooperation: Collaborate with outdoor influencers and skincare experts to create professional content;

Data-Driven Assortment: Optimize product portfolios based on consumer data analysis.

6.2.3 Recommendations for Manufacturers

Pre-Layout New Technologies: Focus on electronic atomization technology and intelligent packaging technology;

Establish Raw Material Advantages: Cooperate with scientific research institutions to develop proprietary new sunscreen raw materials;

Upgrade Green Manufacturing: Build carbon-neutral factories and obtain environmental certifications;

Enhance Flexible Production Capabilities: Adapt to market demands for small-batch and multi-variety production.

6.3 Future Trend Outlook

Based on current market dynamics, the sunscreen spray market will exhibit the following key trends in 2026 and beyond:

① Safety Barriers as Core Competitiveness: Competition centered on "toxicological safety" will intensify. Transparent ingredients and ownership of safety patent technologies (e.g., advanced encapsulation and sustained-release technologies) will become key for brands to build trust moats.

② "Ultra-Segmentation" and "Personalization": The market will evolve from general-purpose products to ultra-segmented products targeting specific sports (e.g., ski sunscreen, surfing sunscreen), specific skin concerns (e.g., oil-acne prone skin, sensitive skin), and specific life stages (e.g., children, pregnant women). Innovative-form sunscreen products, such as ice-cooling "musical sunscreen bubbles" with a unique crackling texture, will also emerge as personalized new sunscreen spray products.

③ Deep Integration of "Makeup-Skincare Integration" and "High Efficiency & Convenience": Development of makeup-style sunscreens will blur the boundaries between sunscreen sprays, base makeup, and setting products, leading to innovative categories such as "sunscreen no-makeup spray", "foundation sunscreen mousse", and "sunscreen setting spray". Dosage forms and packaging will continue to innovate, pursuing more convenient user experiences (e.g., one-press mist formation, vacuum preservation, portable mini sizes).

④ Sunscreen Evolving into High-Energy Skincare: The boundary between sunscreen and serums will gradually blur, and serum-type sunscreens will continue to gain popularity.

⑤ Sustainable Development as a Brand Imperative: ESG factors such as eco-friendly packaging (refillable cartridges, recycled materials), ocean-friendly formulas (free of specific sunscreen agents harmful to coral reefs), and carbon-neutral production will increasingly influence consumers, especially the younger generation’s purchasing decisions.

⑥ Omni-Channel Scientific Education as a Brand Responsibility: Brand competition will upgrade from pure product marketing to comprehensive competition of "product + content + service". Continuous scientific education on sunscreen through short videos, offline salons, and co-branded popular science brochures will become an important means for brands to shape professional images and win long-term loyalty.

7 Introduction to Tiantu Fine Chemicals

Zhongshan Tiantu Fine Chemical Industry Co., Ltd., founded in 2007, is a high-tech enterprise specializing in the R&D, production, and service of aerosol cosmetics. It is also recognized by industry authorities as "China's premier ODM enterprise for spray cosmetics." The company's main product categories include sunscreen sprays, moisturizing sprays, hair sprays, color cosmetics, and cleansing & bath products. Among these, sunscreen sprays are further subdivided into several popular products, such as crystal clear, tone-up whitening, spot-fading whitening, multi-effect nourishing, outdoor sports, and ultra-high protection variants.

I. Scientific Innovation and Technological Leadership

After 19 years of accumulation and development, Tiantu Fine Chemicals has established a leading position in the sunscreen spray industry. To date, it has obtained approvals for more than 100 independently developed special sunscreen certificates, providing specialized sunscreen services for clients such as Dr. Plant, Rellet, Simpcare, and MINISO. As a "Specialized, Sophisticated, Unique, and Innovative Enterprise" in Guangdong Province, it houses the only "Personal Care and Cosmetic Aerosol Technology R&D Center" in China, and has achieved a series of results in aerosol scientific and technological innovation, making it a veritable leader in industry research and technology.

* Possesses the only CNAS-accredited testing center in China's

aerosol industry.

＊ Has led or participated in the compilation of 33 national, industrial, and group standards for aerosols.

＊ Holds 52 patents, including 39 invention patents, with another 23 patents under substantive examination.

＊ Independently developed and obtained approval for China's first new cosmetic raw material in the aerosol industry—Annona Squamosa Pulp Extract (filing number: Guozhuang Yuanbei Zi 20250101).

II. Strict Quality Control, Quality First

After 19 years of development, Tiantu Fine Chemicals' Testing Center has established a scientific, rigorous, advanced-equipped, and professional quality testing system. Covering a construction area of approximately 300 square meters, the center features rational functional zoning and complete supporting facilities. It is equipped with a variety of high-precision professional testing equipment, including triple quadrupole liquid chromatography-mass spectrometry (LC-MS/MS), gas chromatography-mass spectrometry (GC-MS), high-performance liquid chromatography (HPLC), gas chromatography (GC), biological microscopes, high-power optical microscopes, SPF testers, transepidermal water loss (TEWL) meters, stratum corneum hydration meters, industrial-grade UV imaging cameras, spray laser particle size analyzers, automatic surface/interfacial tension meters, spectrophotometers, and moisture testers. The center also has a professional team with rich experience in physical, chemical, and microbiological testing, providing systematic testing and guarantee throughout the product life cycle, implementing comprehensive control and continuous improvement to firmly safeguard consumer trust.

1. Full Life Cycle Quality Control Coverage

Covering raw materials, packaging materials, semi-finished products to finished products, and spanning the development, production, and market launch stages, implementing systematic monitoring and management to ensure that every link meets high-quality standards.

2. Precise Evaluation of Physical Properties

Focusing on key indicators such as spray morphology, internal pressure, discharge rate, discharge efficiency, net weight, net volume, filling rate, content stability, and packaging material compatibility to ensure the safety, precision, and stability of each product during every use.

3. Strict Monitoring of Chemical Components

Relying on high-precision professional instruments, strictly detecting benzene-based substances, sunscreen agents, prohibited/restricted ingredients, and active ingredient contents to safeguard formula purity and efficacy authenticity.

4. Zero Tolerance for Microbiological Safety

Establishing rigorous preservative challenge test methods and a microbiological testing system, covering the detection of pathogenic microorganisms such as total bacterial colonies, molds and yeasts, heat-resistant coliforms, Pseudomonas aeruginosa, and Staphylococcus aureus, building a reliable barrier for consumer health.

5. Scientific Evaluation of Efficacy and Systems

Establishing key evaluation methods such as sunscreen value assessment, emulsification system analysis, and transepidermal water loss testing to ensure the efficiency, effectiveness, and credibility of product development and production processes.

III. Sunscreen Innovation, Empowered by Technology

As a technological leader in aerosol cosmetics, Tiantu has always believed that market insight + R&D innovation are the core competitiveness of long-term enterprise development. Therefore, based on precise market analysis and opportunity insight, we focus on core categories and continuously refine valuable, perceptible, and differentiated new beauty products. In the field of sunscreen innovation, Tiantu has independently developed the 3D Smart Protection Microencapsulation Technology, empowering new sunscreen concepts through scientific and technological innovation.

Dimension 1: Sunscreen Efficacy Enhancement

Through targeted controlled release via microencapsulation, 4 chemical sunscreen agents achieve the protection density of traditional 7 sunscreen agents. The construction of a precise protection network makes the SPF50+ high-protection formula more concise and efficient.

Dimension 2: Advanced Gentleness

Innovatively adopting biomimetic zero-sensation protective film technology. A biomimetic sustained-release film is used to specifically encapsulate sunscreen agents, wrapping them in a soft, breathable, and stable "invisible protective layer". It can effectively prevent the penetration of sunscreen ingredients, allowing sunscreen agents to act precisely and evenly only on the skin surface. The formula achieves a "full green rating" on Meixiu (a cosmetic ingredient review platform), creating a high-protection sunscreen system that is alcohol-free, mild, and non-irritating.

Dimension 3: Encapsulation of Bio-Protective Ingredients

The new Bio-Sun Defense Pro complex + polar salt lake microalgae—natural light-filtering active molecules strongly absorb ultraviolet and blue light wavelengths, effectively resisting photoaging, enhancing protection, and repairing the skin barrier. Through encapsulation technology, active ingredients are released sustainably for long-lasting efficacy.

Over the past 19 years, guided by the corporate values of "Innovation, Benevolence, Excellence, Empowerment", Tiantu Fine Chemicals has taken "Mastery in Simplicity, Craftsmanship in Refinement" as its core, "Scientific Research Empowerment, Innovative Breakthroughs" as its wings, and the concept of "Whole-Employee Participation in the Product Life Cycle" for continuous improvement. It provides comprehensive solutions for clients covering categories such as sunscreen, moisturizing, hair care, and makeup modification, striving to become the most innovative aerosol cosmetic enterprise in the world.


ENTOP
天图精化
8大品类
从“美”到“护”全覆盖
防晒系列
专业防晒全品类
防晒喷雾
防晒慕斯/冰泡泡
防晒水/乳/霜
防晒精华/啫喱
成人/儿童/青少年/
儿童系列
科学分龄防晒
趣味洗沐慕斯
儿童敏肌护理
面部护理
美白特证系列
保湿喷雾系列
碳酸/注氧精华系列
面部清洁/卸妆系列
发品造型
定型喷雾
干发喷雾/啫喱/慕斯
蓬松水喷雾
护卷慕斯
护发喷雾
特色洗护
儿童洗沐二合一
碳酸洗护系列
后发泡洗护系列
护发喷雾/发膜
身体护理
身体精华/乳/油
喷雾身体乳慕斯
碳酸冰肌乳泡
冰肌身体喷雾
止汗香体喷雾
美肤修饰
定妆喷雾系列
素颜防晒系列
身体素颜系列
修颜隔离系列
宠物家清
宠物护理系列
除菌除味喷雾
厨卫清洁系列
家电清洁系列

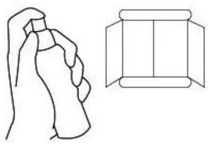
Appendix 1 9 Essential Usage "Secrets" for Sunscreen Sprays

1. Due to differences in personal skin types, please conduct a skin test on the inner arm, behind the ear or other areas before first use. If any discomfort occurs, stop using it. People with respiratory tract or skin allergies are not recommended to use it;

2. Sunscreen spray is mainly sprayed on body parts. Avoid the nose, mouth and eyes to prevent inhalation, and do not spray directly on the face. When using on the face and neck, first spray it on the palm of your hand, then apply it evenly. If it accidentally gets into the eyes, rinse immediately with water;

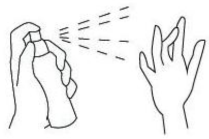
3. 15-20 minutes before going out, shake the bottle fully up and down 4-5 times in a well-ventilated place such as a balcony or outdoors, and spray evenly 15-20cm away from the skin;

4. It is recommended to apply it every 2 hours, or reapply it in a timely manner after sweating, swimming or playing in water to get a better sunscreen experience;



1 外出前，选择阳台等通风处使用

2 使用前，上下充分摇晃瓶身4～5次



3 使用时，距离皮肤15-20cm来回喷洒

5. Use it in a well-ventilated environment. Avoid using it in small, closed and poorly ventilated spaces such as toilets and cars. Keep your mouth and nose closed when using to prevent inhalation;

6. Do not spray continuously for more than 3 seconds at close range (such as within 10cm) on the same part of the body. Long-term or close-range use may cause skin frostbite;

7. Avoid using it on mucous membranes or areas with skin abnormalities such as wounds, swelling and eczema;

8. Keep it out of the reach of children. Children should use it under adult supervision. When using on the face and neck, first spray it on the hands, then apply it evenly with hands. Please be careful not to inhale the gas, keep your eyes and mouth closed when using, and do not deliberately inhale;

9. Store it in a dry and ventilated environment below 50°C, avoiding direct sunlight. Keep away from fire sources, heat sources and static electricity when using. Do not impact the product, and do not pierce the product or used empty cans or throw them into fire.

不要在车内等狭小密闭不通风空间内使用

避免直接喷脸

避免阳光直晒

Appendix 2 List of Relevant Regulations and Standards

Zhongshan Tiantu Fine Chemicals Co., Ltd. has participated in the formulation of a total of 33 national/industrial/group standards. A partial list is provided below:

Standard type	Standard number	Standard Name	Tiantu Characters
National Standard	GB/T 14449	Test Methods for Aerosol Products	Participated in Drafting
National Standards	Project approved and underway.	Cosmetic aerosol products	Core members of the drafting team
industry standards	BB/T 0086	Binary packaged capsule valve aerosol	Lead writer drafting
industry standards	BB/T 0005	Labeling, classification and terminology of aerosol products	Participate in drafting
industry standards	AQ 3041	Aerosol Safety Production Standards	Participate in drafting
industry standards	QB/T 8210	Standard for Quality Traceability System of Daily Chemical Products	Participate in drafting
Group Standards	T/GDCA 019	Sunscreen spray	Lead writer drafting
Group Standards	T/CPF 0119	Sunscreen aerosol	Lead writer of the draft
Group	T/GDCA 022	Kids Shampoo and	Lead writer of the

Standard type	Standard number	Standard Name	Tiantu Characters
Standards		Body Mousse	draft
Group Standards	T/GDBCA 003	Hair setting aerosol	Lead writer of the draft
Group Standards	T/CPF 0118	Shampoo and/or shower gel (mousse)	Lead writer of the draft
Group Standards	T/GDICST 007	Dual-packaging capsule valve aerosol cosmetics (post-foaming gel type)	Lead writer of the draft
Group Standards	T/ZSHG 017	Dual-component moisturizing spray	Lead writer drafting
Group Standards	T/GDCA 027	Use dry shampoo volumizing spray	Lead writer drafting
Group Standards	T/GDMPAS 001	Acute inhalation toxicity test method for sunscreen spray cosmetics	Participate in drafting
Group Standards	T/GDCA 041	Water-washable testing and evaluation methods for sunscreen cosmetics	Participate in drafting
Group Standards	T/GDCQMA 002	Cosmetic stability testing specifications	Participate in drafting
Group Standards	T/ZSHG 025	Post-foaming gel cleansing aerosol	Participate in drafting

Note: All data in this white paper is current as of February 2026. Partial forecast data is derived from historical trends and expert interviews. Data related to Tiantu Fine Chemicals is sourced from the company's official records.

ENTOP 天图精化

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