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Global Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) Supply, Demand and Key Producers, 2026-2032

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Abstracts

The global Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) market size is expected to reach $ 129 million by 2032, rising at a market growth of 13.2% CAGR during the forecast period (2026-2032).

Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) is an ultra-trace elemental analysis system used mainly in semiconductor manufacturing for wafer surface contamination control. In this workflow, the wafer surface layer—typically an oxide or nitride-related surface layer—is decomposed by HF vapor, while the remaining metallic impurities are recovered by a scanning or droplet-based liquid step and then quantified by ICP-MS. Compared with direct surface methods alone, VPD-ICP-MS is used when much lower detection limits, stronger matrix tolerance, and more reproducible quantification are required for routine wafer analysis.

Upstream, a VPD-ICP-MS system is built around two major hardware blocks: the VPD pretreatment section and the ICP-MS section. Downstream, the system is used mainly by silicon wafer manufacturers, semiconductor fabs, QA laboratories, and semiconductor R&D/process-development teams for wafer/substrate contamination analysis, in-line contamination monitoring, and high-sensitivity evaluation of trace metals on wafer surfaces and related layers.

In 2025, global sales of Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) reached approximately 21 units, with an average global market price of around US$ 2,519 K/unit. Production capacity varies significantly among manufacturers, with gross profit margins ranging from approximately 40% to 50%.

From a market-structure perspective, VPD-ICP-MS is not a broad-volume laboratory

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instrument category. It is a specialized contamination-metrology platform embedded in semiconductor manufacturing workflows. Its value proposition is not simply the ICP-MS analyzer itself, but the integration of vapor phase decomposition, droplet recovery, automated sample handling, and ultra-trace elemental quantification into a repeatable and fab-compatible workflow. As wafer cleanliness requirements tighten and customers place more emphasis on incoming-material qualification, in-line contamination control, and root-cause analysis, VPD-ICP-MS is increasingly positioned as a yield-protection and process-control platform rather than just a lab tool.

Competitive dynamics are shaped by a small supplier base, long qualification cycles, and high replacement barriers. Leading vendors emphasize automation, deep ICP-MS integration, factory communication capability, and compatibility with edge, backside, and special-surface analysis. Once a system is qualified into a customer's contamination-control workflow, switching costs extend well beyond hardware to recipes, methods, interfaces, and historical data continuity. At the same time, public procurement records show that some fabs still buy the VPD platform and the ICP-MS analyzer separately, which means the fully integrated VPD-ICP-MS market has strong strategic relevance but penetrates according to each fab's legacy lab architecture and purchasing philosophy.

This report studies the global Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) and provides market size (US$ million) and Year-over-Year (YoY) Growth, considering 2025 as the base year. This report explores demand trends and competition, as well as details the characteristics of Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) that contribute to its increasing demand across many markets.

Highlights and key features of the study

Global Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) total production and demand, 2021-2032, (Unit)

Global Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) total production value, 2021-2032, (USD Million)

Global Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) production by region &

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country, production, value, CAGR, 2021-2032, (USD Million) & (Unit), (based on production site)

Global Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) consumption by region & country, CAGR, 2021-2032 & (Unit)

U.S. VS China: Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) domestic production, consumption, key domestic manufacturers and share

Global Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (Unit)

Global Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) production by Type, production, value, CAGR, 2021-2032, (USD Million) & (Unit)

Global Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) production by Application, production, value, CAGR, 2021-2032, (USD Million) & (Unit)

This report profiles key players in the global Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) market based on the following parameters - company overview, production, value, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include PVA TePla, RORZE IAS, Elemental Scientific (ESI), etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Stakeholders would have ease in decision-making through various strategy matrices used in analyzing the World Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) market

Detailed Segmentation:

Each section contains quantitative market data including market by value (US$ Millions), volume (production, consumption) & (Unit) and average price (K US$/Unit) by manufacturer, by Type, and by Application. Data is given for the years 2021-2032 by year with 2025 as the base year, 2026 as the estimate year, and 2027-2032 as the forecast year.

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Global Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) Market, By Region:

United States

China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) Market, Segmentation by Type:

Semi-Automatic

Fully Automatic

Global Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) Market, Segmentation by System Integration Architecture:

Externally Coupled

Fully Integrated

Global Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) Market, Segmentation by Scan and Recovery Coverage:

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Full-Wafer Analysis

Selected-Area Analysis

Other

Global Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) Market, Segmentation by Application:

Wafer Surface Trace Metal Analysis

Incoming Wafer Cleanliness Qualification

Process Contamination Monitoring

Edge and Backside Analysis

Other

Companies Profiled:

PVA TePla

RORZE IAS

Elemental Scientific (ESI)

Key Questions Answered:

1. How big is the global Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) market?
2. What is the demand of the global Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) market?
3. What is the year over year growth of the global Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) market?
4. What is the production and production value of the global Vapor Phase Decomposition ICP-MS (VPD-ICP-MS) market?
5. Who are the key producers in the global Vapor Phase Decomposition ICP-MS (VPD-

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ICP-MS) market?
6. What are the growth factors driving the market demand?

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