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Global Indium Phosphide Substrate for Data Centers Market 2026 by Manufacturers, Regions, Type and Application, Forecast to 2032

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Abstracts

According to our (Global Info Research) latest study, the global Indium Phosphide Substrate for Data Centers market size was valued at US$ 861 million in 2025 and is forecast to a readjusted size of US$ 1811 million by 2032 with a CAGR of 11.2% during review period.

Indium phosphide substrates for data centers refer to semiconductor substrate wafers made from single-crystal indium phosphide (InP). They are specifically designed for manufacturing high-speed optoelectronic and high-frequency radio frequency devices, serving as a core material in high-speed optical communication and high-speed interconnect systems within data centers.

The upstream of the industry chain mainly includes suppliers of high-purity phosphorus and indium raw materials, as well as key equipment and material suppliers such as single crystal growth equipment (e.g., VGF, LEC crystal growth furnaces), high-purity quartz crucibles, and precision temperature control systems. These links determine the crystal defect density, uniformity, and yield. The midstream is the indium phosphide substrate manufacturing process, encompassing crystal growth, slicing, polishing, pre-epitaxy processing, and sorting. The core is the preparation of high-purity, low-defect InP single crystal substrates and epitaxial wafers that meet the requirements of optical communication devices, used in subsequent laser and high-speed optoelectronic device manufacturing. The downstream is mainly used in high-speed optical communication in data centers, including 400G/800G/1.6T optical modules, coherent optical communication systems, silicon photonics hybrid integrated devices, and high-speed optoelectronic integrated circuits (PICs), ultimately serving AI computing centers, hyperscale data centers, and high-speed network interconnection scenarios. It is one of

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the key basic materials supporting next-generation high-speed optical interconnects.

In 2025, the global sales volume of indium phosphide substrates for data centers will reach 364,000 pieces, with a production capacity of approximately 520,000 pieces. The average selling price is US$2,300 per piece, and the average gross profit margin is 30%-40%.

Global investment in AI infrastructure and high-speed communication networks continues to increase, driving rapid upgrades to data center optical interconnects. Meanwhile, countries are placing greater emphasis on the security of the semiconductor key materials supply chain, with III-V compound semiconductors such as InP being included in their high-end materials strategic plans. Companies in Europe, the US, and Japan are continuously increasing capital expenditures to expand their optical communication materials production capacity; however, due to high technological barriers, supply elasticity remains limited in the short term, resulting in an industry characterized by 'rapid demand growth + rigid supply constraints.'

This report is a detailed and comprehensive analysis for global Indium Phosphide Substrate for Data Centers market. Both quantitative and qualitative analyses are presented by manufacturers, by region & country, by Type and by Application. As the market is constantly changing, this report explores the competition, supply and demand trends, as well as key factors that contribute to its changing demands across many markets. Company profiles and product examples of selected competitors, along with market share estimates of some of the selected leaders for the year 2025, are provided.

Key Features:

Global Indium Phosphide Substrate for Data Centers market size and forecasts, in consumption value ($ Million), sales quantity (K Pcs), and average selling prices (US$/Pc), 2021-2032

Global Indium Phosphide Substrate for Data Centers market size and forecasts by region and country, in consumption value ($ Million), sales quantity (K Pcs), and average selling prices (US$/Pc), 2021-2032

Global Indium Phosphide Substrate for Data Centers market size and forecasts, by Type and by Application, in consumption value ($ Million), sales quantity (K Pcs), and average selling prices (US$/Pc), 2021-2032

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Global Indium Phosphide Substrate for Data Centers market shares of main players, shipments in revenue ($ Million), sales quantity (K Pcs), and ASP (US$/Pc), 2021-2026

The Primary Objectives in This Report Are:

To determine the size of the total market opportunity of global and key countries

To assess the growth potential for Indium Phosphide Substrate for Data Centers

To forecast future growth in each product and end-use market

To assess competitive factors affecting the marketplace

This report profiles key players in the global Indium Phosphide Substrate for Data Centers market based on the following parameters - company overview, sales quantity, revenue, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Sumitomo, AXT, JX Advanced Metals, InPACT, Wafer Tech, Yunnan Germanium Industry, Lead Technology, Zhuhai Dingtai Chip Source, GRINM Advanced Materials, etc.

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

Market Segmentation

Indium Phosphide Substrate for Data Centers market is split by Type and by Application. For the period 2021-2032, the growth among segments provides accurate calculations and forecasts for consumption value by Type, and by Application in terms of volume and value. This analysis can help you expand your business by targeting qualified niche markets.

Market segment by Type

N-Type InP

P-Type InP

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Market segment by Wafer Size

2 Inches

3 Inches

4 Inches

6 Inches

Market segment by Subsequent Process Forms

Polished Wafer

Epiaxial Wafer

Market segment by Application

High-Speed Optical Modules

Coherent Optical Communication Systems

Silicon Photonic Hybrid Integrated Devices

Photonic Integrated Circuits

Others

Major players covered

Sumitomo

AXT

JX Advanced Metals

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InPACT

Wafer Tech

Yunnan Germanium Industry

Lead Technology

Zhuhai Dingtai Chip Source

GRINM Advanced Materials

Market segment by region, regional analysis covers

North America (United States, Canada, and Mexico)

Europe (Germany, France, United Kingdom, Russia, Italy, and Rest of Europe)

Asia-Pacific (China, Japan, Korea, India, Southeast Asia, and Australia)

South America (Brazil, Argentina, Colombia, and Rest of South America)

Middle East & Africa (Saudi Arabia, UAE, Egypt, South Africa, and Rest of Middle East & Africa)

The content of the study subjects, includes a total of 15 chapters:

Chapter 1, to describe Indium Phosphide Substrate for Data Centers product scope, market overview, market estimation caveats and base year.

Chapter 2, to profile the top manufacturers of Indium Phosphide Substrate for Data Centers, with price, sales quantity, revenue, and global market share of Indium Phosphide Substrate for Data Centers from 2021 to 2026.

Chapter 3, the Indium Phosphide Substrate for Data Centers competitive situation, sales quantity, revenue, and global market share of top manufacturers are analyzed emphatically by landscape contrast.

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Chapter 4, the Indium Phosphide Substrate for Data Centers breakdown data are shown at the regional level, to show the sales quantity, consumption value, and growth by regions, from 2021 to 2032.

Chapter 5 and 6, to segment the sales by Type and by Application, with sales market share and growth rate by Type, by Application, from 2021 to 2032.

Chapter 7, 8, 9, 10 and 11, to break the sales data at the country level, with sales quantity, consumption value, and market share for key countries in the world, from 2021 to 2026.and Indium Phosphide Substrate for Data Centers market forecast, by regions, by Type, and by Application, with sales and revenue, from 2027 to 2032.

Chapter 12, market dynamics, drivers, restraints, trends, and Porters Five Forces analysis.

Chapter 13, the key raw materials and key suppliers, and industry chain of Indium Phosphide Substrate for Data Centers.

Chapter 14 and 15, to describe Indium Phosphide Substrate for Data Centers sales channel, distributors, customers, research findings and conclusion.

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