

Global Fiber Bragg Grating (FBG) Market 2024 by Manufacturers, Regions, Type and Application, Forecast to 2030

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Abstracts

According to our (Global Info Research) latest study, the global Fiber Bragg Grating (FBG) market size was valued at USD 1703.7 million in 2023 and is forecast to a readjusted size of USD 7814.3 million by 2030 with a CAGR of 24.3% during review period.

A fiber Bragg grating (FBG) is a type of distributed Bragg reflector constructed in a short segment of optical fiber that reflects particular wavelengths of light and transmits all others. This is achieved by adding a periodic variation to the refractive index of the fiber core, which generates a wavelength specific dielectric mirror. An FBG is an invisible reflector inside the core of the fiber that is set to a specific wavelength of light. When the fiber where the FBG is located is exposed to strain or temperature, the FBG's "center wavelength" shifts to a higher or lower wavelength. The direction and magnitude of the shift is proportional to the change in strain or temperature.

A fiber Bragg grating can therefore be used as an inline optical filter to block certain wavelengths, or as a wavelength-specific reflector. Fiber Bragg Gratings are made by laterally exposing the core of a single-mode fiber to a periodic pattern of intense ultraviolet light. The exposure produces a permanent increase in the refractive index of the fiber's core, creating a fixed index modulation according to the exposure pattern. This fixed index modulation is called a grating. At each periodic refraction change a small amount of light is reflected. All the reflected light signals combine coherently to one large reflection at a particular wavelength when the grating period is approximately half the input light's wavelength. This is referred to as the Bragg condition, and the wavelength at which this reflection occurs is called the Bragg wavelength. In a FBG, the refractive index of the core is periodically modulated along the fiber's main axis. The

period of the modulation ranges typically from a few hundred nanometers to a few microns. When light is launched into a FBG, it experiences a certain amount of scattering at each grating plane. Most of the scattered light becomes more and more out-of-phase and eventually decays due to deconstructive interference. If the Bragg condition is satisfied for one of the colors of the input light, then a sharp reflected peak is observed in the backward direction with a center wavelength determined by the grating's parameters.

The industry is not very high concentration, the key brand include Micron Optics, Proximion AB, HBM FiberSensing, ITF Technologies Inc, FBGS Technologies GmbH, Technica, iXFiber, Smart Fibres Limited, fos4x, Advanced Optics Solutions GmbH, Wuhan Ligong Guangke, TeraXion, FBG Korea, GEOPTEx bvba(FOS&S), Alnair Labs Corporation and so on. North America is the largest consumption place, with a consumption market share nearly 32%. Following North America, Europe is the second largest consumption place with the consumption market share of 28%.

The Global Info Research report includes an overview of the development of the Fiber Bragg Grating (FBG) industry chain, the market status of Optical Communication (Fiber Bragg Grating Filter, Fiber Bragg Grating Sensors), Aerospace Applications (Fiber Bragg Grating Filter, Fiber Bragg Grating Sensors), and key enterprises in developed and developing market, and analysed the cutting-edge technology, patent, hot applications and market trends of Fiber Bragg Grating (FBG).

Regionally, the report analyzes the Fiber Bragg Grating (FBG) markets in key regions. North America and Europe are experiencing steady growth, driven by government initiatives and increasing consumer awareness. Asia-Pacific, particularly China, leads the global Fiber Bragg Grating (FBG) market, with robust domestic demand, supportive policies, and a strong manufacturing base.

Key Features:

The report presents comprehensive understanding of the Fiber Bragg Grating (FBG) market. It provides a holistic view of the industry, as well as detailed insights into individual components and stakeholders. The report analysis market dynamics, trends, challenges, and opportunities within the Fiber Bragg Grating (FBG) industry.

The report involves analyzing the market at a macro level:

Market Sizing and Segmentation: Report collect data on the overall market size,

including the sales quantity (K Units), revenue generated, and market share of different by Type (e.g., Fiber Bragg Grating Filter, Fiber Bragg Grating Sensors).

Industry Analysis: Report analyse the broader industry trends, such as government policies and regulations, technological advancements, consumer preferences, and market dynamics. This analysis helps in understanding the key drivers and challenges influencing the Fiber Bragg Grating (FBG) market.

Regional Analysis: The report involves examining the Fiber Bragg Grating (FBG) market at a regional or national level. Report analyses regional factors such as government incentives, infrastructure development, economic conditions, and consumer behaviour to identify variations and opportunities within different markets.

Market Projections: Report covers the gathered data and analysis to make future projections and forecasts for the Fiber Bragg Grating (FBG) market. This may include estimating market growth rates, predicting market demand, and identifying emerging trends.

The report also involves a more granular approach to Fiber Bragg Grating (FBG):

Company Analysis: Report covers individual Fiber Bragg Grating (FBG) manufacturers, suppliers, and other relevant industry players. This analysis includes studying their financial performance, market positioning, product portfolios, partnerships, and strategies.

Consumer Analysis: Report covers data on consumer behaviour, preferences, and attitudes towards Fiber Bragg Grating (FBG) This may involve surveys, interviews, and analysis of consumer reviews and feedback from different by Application (Optical Communication, Aerospace Applications).

Technology Analysis: Report covers specific technologies relevant to Fiber Bragg Grating (FBG). It assesses the current state, advancements, and potential future developments in Fiber Bragg Grating (FBG) areas.

Competitive Landscape: By analyzing individual companies, suppliers, and consumers, the report present insights into the competitive landscape of the Fiber Bragg Grating (FBG) market. This analysis helps understand market share, competitive advantages, and potential areas for differentiation among industry players.

Market Validation: The report involves validating findings and projections through primary research, such as surveys, interviews, and focus groups.

Market Segmentation

Fiber Bragg Grating (FBG) market is split by Type and by Application. For the period 2019-2030, the growth among segments provides accurate calculations and forecasts for consumption value by Type, and by Application in terms of volume and value.

Market segment by Type

Fiber Bragg Grating Filter

Fiber Bragg Grating Sensors

Other

Market segment by Application

Optical Communication

Aerospace Applications

Energy Industry

Transportation

Geo-Technical & Civil Engineering

Other

Major players covered

Micron Optics

Proximion AB

HBM FiberSensing

ITF Technologies Inc

FBGS Technologies GmbH

Technica

iXFiber

Smart Fibres Limited

fos4x

Advanced Optics Solutions GmbH

Wuhan Ligong Guangke

TeraXion

FBG Korea

GEOPTEX bvba (FOS&S)

Alnair Labs Corporation

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 Fiber Bragg Grating (FBG) product scope, market overview, market estimation caveats and base year.

Chapter 2, to profile the top manufacturers of Fiber Bragg Grating (FBG), with price, sales, revenue and global market share of Fiber Bragg Grating (FBG) from 2019 to 2024.

Chapter 3, the Fiber Bragg Grating (FBG) competitive situation, sales quantity, revenue and global market share of top manufacturers are analyzed emphatically by landscape contrast.

Chapter 4, the Fiber Bragg Grating (FBG) breakdown data are shown at the regional level, to show the sales quantity, consumption value and growth by regions, from 2019 to 2030.

Chapter 5 and 6, to segment the sales by Type and application, with sales market share and growth rate by type, application, from 2019 to 2030.

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 2017 to 2023. and Fiber Bragg Grating (FBG) market forecast, by regions, type and application, with sales and revenue, from 2025 to 2030.

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 Fiber Bragg Grating (FBG).

Chapter 14 and 15, to describe Fiber Bragg Grating (FBG) sales channel, distributors, customers, research findings and conclusion.

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