

Global Fiber Bragg Grating (FBG) Market 2025 by Manufacturers, Regions, Type and Application, Forecast to 2031

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Abstracts

According to our (Global Info Research) latest study, the global Fiber Bragg Grating (FBG) market size was valued at US\$ 795 million in 2024 and is forecast to a readjusted size of USD 1574 million by 2031 with a CAGR of 10.4% 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 key players of Fiber Bragg Grating (FBG) include Luna Innovations, Proximion AB, HBK FiberSensing and ITF Technologies. The top four manufacturers hold approximately 31% of the global market share,.

In terms of product type, Fiber Bragg Grating Sensors is the largest segment, with a share of 75%. And in terms of application, Geo-Technical & Civil Engineering has a share about 23 percent.

This report is a detailed and comprehensive analysis for global Fiber Bragg Grating (FBG) 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 Fiber Bragg Grating (FBG) market size and forecasts, in consumption value (\$ Million), sales quantity (K Units), and average selling prices (US\$/Unit), 2020-2031

Global Fiber Bragg Grating (FBG) market size and forecasts by region and country, in consumption value (\$ Million), sales quantity (K Units), and average selling prices (US\$/Unit), 2020-2031

Global Fiber Bragg Grating (FBG) market size and forecasts, by Type and by Application, in consumption value (\$ Million), sales quantity (K Units), and average selling prices (US\$/Unit), 2020-2031

Global Fiber Bragg Grating (FBG) market shares of main players, shipments in revenue (\$ Million), sales quantity (K Units), and ASP (US\$/Unit), 2020-2025

The Primary Objectives in This Report Are:

Global Fiber Bragg Grating (FBG) Market 2025 by Manufacturers, Regions, Type and Application, Forecast to 2031

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

To assess the growth potential for Fiber Bragg Grating (FBG)

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 Fiber Bragg Grating (FBG) 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 Luna Innovations, Proximion AB, HBK FiberSensing, ITF Technologies, FBGS Technologies GmbH, Technica, INFIBRA TECHNOLOGIES, Smart Fibres Ltd (Halliburton), PolyTech, Advanced Optics Solutions GmbH, etc.

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

Market Segmentation

Fiber Bragg Grating (FBG) market is split by Type and by Application. For the period 2020-2031, 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

Fiber Bragg Grating Filter

Fiber Bragg Grating Sensors

Other

Market segment by Application

Optical Communication

Aerospace

Energy Industry

Transportation Field

Geotechnical and Civil Engineering

Other

Major players covered

Luna Innovations

Proximion AB

HBK FiberSensing

ITF Technologies

FBGS Technologies GmbH

Technica

INFIBRA TECHNOLOGIES

Smart Fibres Ltd (Halliburton)

PolyTech

Advanced Optics Solutions GmbH

WUHAN LIGONG GUANGKE

TeraXion?INDI?

FBG Korea

Smartec (Roctest)

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 quantity, revenue, and global market share of Fiber Bragg Grating (FBG) from 2020 to 2025.

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 2020 to 2031.

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 2020 to 2031.

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 2020 to 2025. and Fiber Bragg Grating (FBG) market forecast, by regions, by Type, and by Application, with sales and revenue, from 2026 to 2031.

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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