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Global Fluoropolymers Market: Analysis By Consumption, By Type (PTFE, PVDF, FEP, Fluoroelastomers, ETFE, PFA, and Others), By Application (Pipe, Tube, Film, Sheet, Roofing, Membrane, Additives, Sealant, and Others), By End User (Industrial Equipment, Automotive, Electrical and Electronics, Construction, and Others), By Region Size and Trends with Impact of COVID-19 and Forecast up to 2028

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Abstracts

Fluoropolymers are a class of synthetic polymers characterized by the presence of fluorine atoms in their molecular structure. They are mainly known for their broad temperature ranges, low friction, chemical resistance, electrical and mechanical insulation, low surface energy, and excellent thermal insulation properties. The global fluoropolymers market encompasses economic activities associated with production, distribution, and consumption of fluoropolymer materials and products, each tailored for specific application and industry. Fluoropolymers are in high demand, and China has been the leading consumer of these polymers globally. The global fluoropolymers market value stood at US$8.17 billion in 2022, and is expected to reach US$10.95 billion by 2028. Global fluoropolymers market consumption stood at 311.06 billion tonnes per annum in 2022.

Fluoropolymers are finding increased usage in automobiles, electrical and electronics and new energy applications like energy harvesting, sensors, 5G etc. due to higher chemical resistance, better insulation properties, and stability at wider range of temperature and pressure. Global fluoropolymers market demonstrated a consistent

growth, primarily driven by fast-paced growth of the aviation industry, increasing digitalization, growing demand for low weight and high resistant polymers in the industrial maintenance sector, increasing investments by regional governments in the Asia Pacific region for industrial development, rapidly expanding automotive sector, growing demand for flexible packaging solutions in food and beverage industries, and rise in number of research initiatives to fabricate an eco-friendlier fluoropolymer, etc. Furthermore, rapid industrialization, ongoing advancements in electronic component design, emerging market for melt-processable fluoropolymers, growing energy demand, and emerging applications such as photovoltaic modules and architectural membranes, etc., will continue to boost the growth of global fluoropolymers market in the upcoming years. The market is expected to grow at a CAGR of 5% over the projected period of 2023-2028.

Market Segmentation Analysis:

By Type: The report provides the bifurcation of the fluoropolymers market into seven segments based on type, namely, PTFE, PVDF, FEP, Fluoroelastomers, ETFE, PFA, and others. PTFE is the largest segment of global fluoropolymer market owing to increasing prevalence of non-stick cookware, rapidly growing chemical processing industries, low cost of PTFE in comparison to other HPF, growing demand for high-performance polymers in various industrial applications, rise in number of pickup trucks and small passenger cars, increasing infrastructure development in emerging economies, and emerging applications of PTFE in renewable energy, MEMS technology, water filtration membrane, and 3D printing. PFA is the fastest growing segment of global fluoropolymers market owing to increasing demand from various end user industries, surging digitalization, ongoing advancements in electronic component designing, rising government spending on infrastructure projects in developing economies, increasing awareness about the environmental benefits of using PFA fluoropolymers, rising investments in medical and pharmaceutical sectors, automotive industry's emphasis on lightweight materials for fuel efficiency, and PFAs unique material properties such as high-temperature stability, excellent electrical insulation, UV resistance, low extractables and purity, etc.

Similarly, on the basis of type, the global fluoropolymers market consumption can be divided into six segments, namely, PTFE, PVDF, FEP, ETFE, PFA, and others, where PTFE is the largest segment by consumption and PFA is the fastest segment.

By Application: The report provides the bifurcation of the fluoropolymers market into nine segments on the basis of application: pipe, tube, film, sheet, roofing, membrane, additives, sealant, and others. Pipe is the largest segment of global fluoropolymers market as a result of rapid urbanization, increasing demand in oil and gas exploration, expansion of industrial infrastructure requiring reliable and durable piping systems, increased focus of government authorities on rural water management program, growing application in pharmaceutical and biotechnology sectors, and unique advantages of using PFA pipes in terms of chemical & corrosion resistance, temperature stability, durability and longevity, lightweight and flexible, etc.

By End User: The report provides the bifurcation of the fluoropolymers market into five segments on the basis of end user: industrial equipment, automotive, electrical and electronics, construction, and others. Industrial equipment is the largest segment of global fluoropolymer market as a result of increasing demand for high-performance plastics, growing awareness of industrial efficiency, rising trend of industrialization in emerging economies, aging infrastructure, increasing demand for chemical resistant materials, growing need for temperature resistant gaskets & energy pumps inner linings, and rising infrastructure development projects, such as construction of bridges, power plants, and other large-scale facilities.

By Region: The report provides insight into fluoropolymers market based on the regions namely, Europe, North America, Asia Pacific, and rest of the world. Asia Pacific is both the largest & fastest growing region of global fluoropolymers market, owing to rapid urbanization, rising middle-class population, burgeoning electronics and telecommunications sector, increasing foreign direct investment in countries such as Indonesia, Malaysia, and Thailand, improving standard of living, ongoing infrastructure development projects in countries such as China and India, and rising demand from various end user industries including pharmaceutical, construction, and electrical industries.

The Asia Pacific fluoropolymers market is divided into four regions on the basis of geographical operations, namely, China, Japan, India, and Rest of Asia Pacific, where China held the largest share in Asia Pacific fluoropolymers market owing to increasing investment in supply chain networks to ensure seamless manufacturing and distribution, the presence of highly advanced automotive production facilities, well established chemical sector, increasing government investment in industrial infrastructure, and rising demand for high-quality medical, automotive, and consumer electronics products. China also accounts for a significant proportion of both PTFE and other fluoropolymer global consumption. India is expected to be the fastest growing region as a result of growing healthcare industry, rapidly expanding e-commerce sector, increasing focus on green building initiatives, rising number of government initiatives like 'Smart Cities

Mission' & 'Make in India' fueling infrastructure development, and growing emphasis on self-reliance in the aerospace and defense sectors.

Market Dynamics:

Growth Drivers: The global fluoropolymers market has been rapidly growing over the past few years, due to factors such as rapidly growing automotive sector, increasing demand in electrical and electronics sector, surging application in medical sector, expansion of aerospace industry, rising need of fluoropolymers in various other end user industries, etc. Fluoropolymers are increasingly used in making fabrics, non-stick coatings for cookware, fuel hoses, gaskets, insulation materials in printed circuits and semiconductors, and fiberglass composites in construction works on account of their flame retardancy, thermal stability, weatherability, and friction properties. Also, in the construction industry, fluoropolymers are used in architectural coatings, sealants, and other applications where weather resistance and durability are essential. Furthermore, fluoropolymer coatings are applied to aircraft components, such as wings and engine components, to prevent the accumulation of ice as these coatings provide a low-friction surface that helps shed ice and improve aerodynamic performance. Therefore, rapidly growing aerospace industry, growing demand for fluoropolymers in various end user industries, and increasing use of fluoropolymers in newer applications such as dental ware, waterproof clothing, photovoltaic modules, and architectural membranes, among others, have been positively contributing to the positive growth of global fluoropolymers market over the years.

Challenges: However, the global fluoropolymer market growth would be negatively impacted by various challenges such as phasing out of PFAS and PFOA, high prices and limited access to key raw materials, etc. The prices of PTFE, a key raw material used in the production of fluoropolymers, are known to be volatile and subject to fluctuations. PTFE costs are steadily rising due to the closure of major manufacturing facilities in China and Europe. Fluorspar reserves are mainly concentrated in Mexico, China and South Africa which account for ~60% of global reserves (2022), and therefore, due to concentrated availability, fluorspar prices are very volatile and secured access is a key determinant for long-term sustainable business.

Trends: The global fluoropolymer market is projected to grow at a fast pace during the forecasted period, due to increasing demand of electric vehicles, developing 5G communication technology, ongoing advancements in fluoropolymer processing techniques, rising focus on sustainability, etc. Fluoropolymers are commonly utilized in the manufacturing of coatings for PCBs, dielectric materials for antennas, heat-resistant materials for electronic components, and insulating materials for various components in 5G infrastructure. In addition, fluoropolymers are used in the manufacturing of miniaturized components and to protect them from moisture, UV radiation, and other environmental factors, and ensuring that these devices remain durable, efficient and reliable in various environmental conditions. Furthermore, advancements in micro-injection molding to produce small and intricate fluoropolymer components, and improved understanding of the rheological behavior of molten fluoropolymers for better control over the injection molding process, is expected to result in higher fluoropolymers market growth in the coming years.

Impact Analysis of COVID-19 and Way Forward:

COVID-19 brought in many changes in the world in terms of reduced productivity, loss of life, business closures, closing down of factories and organizations, and shift to an online mode of work. Lockdown policies imposed by the government to prevent virus spread forced various end user industries to either shut down or run low on production capacity, resulting in lower production and manufacturing activities by various end user industries and since end user industries demand fluoropolymers in various, there was a sudden fall in the demand of fluoropolymers chemical compounds, impending the growth of the global fluoropolymers market during the period, 2019-2020. In addition, the aerospace industry experienced unprecedented challenges during the COVID-19 pandemic, jeopardizing the demand for fluoropolymers in the production of thermal insulation blankets, panels, coatings, and seat materials.

Competitive Landscape:

Global fluoropolymers market is moderately consolidated, with top players accounting for more than half of global market share in 2022. The key players of the global fluoropolymers market are:

Mitsubishi Chemical Group Corporation
The AGC Group
Daikin Industries, Ltd.
Honeywell International Inc.
Saint-Gobain S.A.
3M Company
DuPont de Nemours, Inc.
The Chemours Company
Gujarat Fluorochemicals Limited

Arkema Group (Arkema S.A.)
Dongyue Group
Syensqo
HaloPolymer, OJSC

Key players of the market are focusing on scalability, innovation, & sustainability by implementing eco-friendly manufacturing practices and developing fluoropolymers with reduced environmental impact. Market players are also focusing on expanding production capacities & global footprint to meet the growing demand for fluoropolymers across various end user industries. For instance, in 2022, Dongyue Group announced that the company has completed the construction of its PVDF project with a capacity of around 10,000 tons per year in China, and upon completion of this project, the company's total PVDF production capacity reached 25,000 tons/year.

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