Chromafora

2025 NEW PRODUCT INNOVATOR

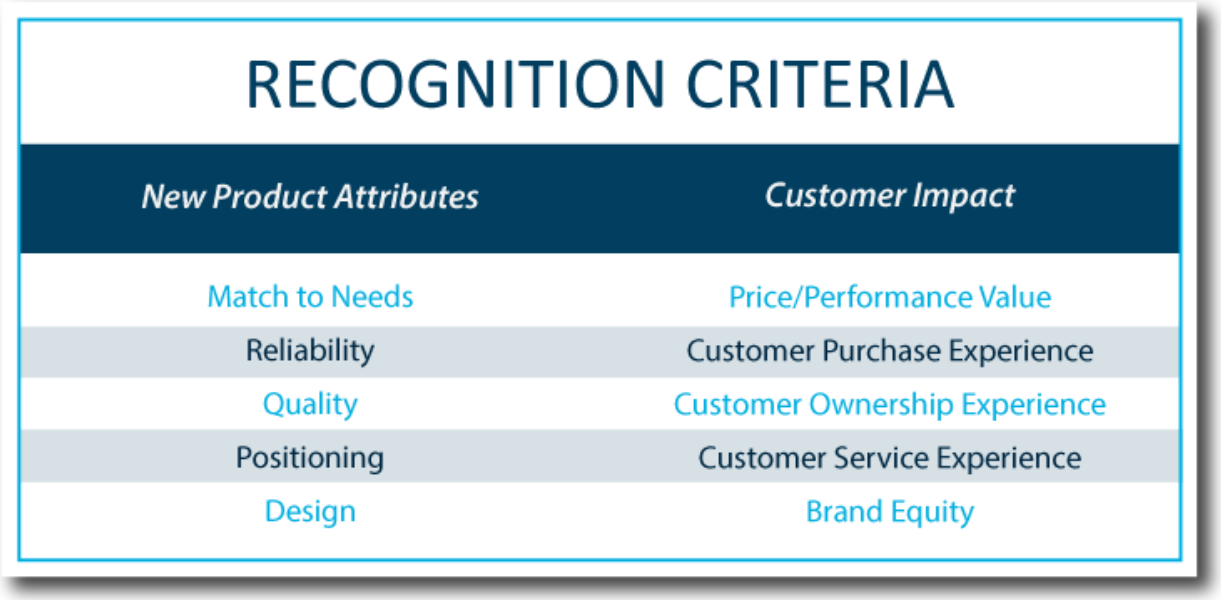
Pioneering New Features and Functionality to Exceed Customer Expectations

RECOGNIZED FOR BEST PRACTICES IN THE GLOBAL PFAS WATER TREATMENT INDUSTRY

FROST & SULLIVAN

Best Practices Criteria for World-class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each recognition category before determining the final recognition recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Chromafora excels in many of the criteria in the PFAS water treatment space.



The Transformation of the Global PFAS Water Treatment Industry

Frost & Sullivan's independent research shows that regulatory, scientific, and economic factors drive the global per- and polyfluoroalkyl substances (PFAS) water treatment industry. Increased public awareness, improved PFAS detection, stricter regulations and policies, and economic opportunities all push the demand for reliable solutions. A growing scientific consensus on PFAS toxicology prompts communities to take action against the health and environmental threats posed by these polymers. As many treatment technologies rapidly increase their market share and revenues year over year, the industry offers potential monetization opportunities.

However, Frost & Sullivan's own analysis confirms that the market faces growth restraints such as high treatment costs, a complex regulatory environment, technological limitations, and the lack of standardized testing methods. PFAS remediation necessitates high-tech technologies, which are often quite expensive, limiting widespread adoption. Moreover, there is a shortage of effective and affordable treatments that can tackle the broad spectrum of contaminants, particularly short-chain PFAS compounds. Finally, non-standardized PFAS testing methods across different countries lead to discrepancies in data comparison and treatment strategy implementation.

Chromafora: Redefining PFAS Water Treatment

Founded in 2010 and headquartered in Solna, Sweden, Chromafora is a technological leader in advanced water treatment and metal extraction solutions. Combining extensive water sector knowledge with robust research and development, the company has pioneered proprietary water treatment technologies: SELPAXT™ (patent-pending) and SELMEXT™ (patented). Both innovations are based on Chromafora's Surfactant-ligand Assisted Membrane Filtration (SAMF) technique. SELPAXT™ has patents pending for PFAS applications in many countries. SELPAXT™ effectively removes short- and long-chain PFAS substances from water streams and SELMEXT™ targets heavy metals. SELMEXT™ also minimizes reliance on virgin extraction of critical raw materials, like gold and other valuable metals.[1]

Chromafora recognizes that limiting PFAS' spread from upstream concentrated sources is the most cost-effective strategy with lasting benefits. However, these water streams are often difficult to treat, posing various challenges - including short-chain PFAS, media regeneration, co-contaminants, and matching waste with disposal techniques. Short-chain PFAS are hard to treat through surface adsorption methods because of their physicochemical properties and problems associated with media saturation and regeneration cycles. Furthermore, over time, every flow-through fixed-bed filtration system becomes saturated "and the number of bed volumes with sufficient removal is usually much fewer for the short-chain compared to the long-chain PFAS."[2] Continuous, meticulous monitoring is imperative to stop PFAS breakthroughs from impacting the effluent stream. It is crucial to determine when the adsorption media is depleted and needs to be replaced or regenerated. However, without online PFAS sensors, operators rely on sampling and external analysis, which can take weeks to produce results. Moreover, fluctuations in the water matrix and PFAS concentration make it harder to conduct system prognostics. As a result, operators must maintain a sufficient operational margin to prevent breakthroughs, keeping the system well below the saturation point.[3]

> *"Frost & Sullivan acknowledges that SELPAXT™ is a breakthrough in PFAS treatment, empowering customers with superior quality and results. Chromafora's technology combines advanced filtration and proprietary chemistry to effectively address complex water contamination challenges. It delivers unmatched removal rates, optimized power usage, seamless scalability, operational efficiency, cost-effectiveness, and long-term sustainability."*
>
> ***- Iqra Azam***
> ***Best Practices Research Analyst***

Furthermore, designing a PFAS treatment plant necessitates a focus on co-existing contaminants that interfere with and deter the process. Some contaminants that severely affect the removal procedures' efficiency are "petroleum products, manganese, iron, sulfate, chloride, hydrogen carbonate, and humic and fulvic acids."[4] Additionally, most PFAS removal methods are sensitive to high levels of dissolved and solid organic and inorganic contents.

[1] https://chromafora.com/technology
[2] White paper: *SELPAXT™ PFAS Removal Technology Technical Insight* (Chromafora, August 2024)
[3] Ibid.
[4] Ibid.

PFAS treatment catalyzes hazardous residuals that require careful management and disposal. Spent adsorption media typically gets incinerated or deposited in landfills. However, municipal solid waste incinerators fail to fully degrade PFAS, leaving traces of short-chain PFAS in the ashes, process water, and flue gas condensate, which leads to secondary pollution. Landfill disposal is not a reliable solution either, as PFAS can remobilize. Moreover, there are limited commercial solutions available for PFAS' long-term stabilization.

Considering these industry gaps and recognizing the significant need for transformative treatment solutions, Chromafora began developing SELPAXT™ in 2017. By 2023, the company reached a major milestone by commissioning its first commercial plant. Frost & Sullivan recognizes that Chromafora is at the forefront of addressing the issue of PFAS contamination, establishing new benchmarks in water treatment technologies and paving the way for cleaner, cost-efficient, and streamlined industrial practices.

SELPAXT™: Overcoming Critical Industry Challenges with Transformative Technology

SELPAXT™, a state-of-the-art water treatment technology, removes up to 99%[5] of long and short-chain PFAS from many water streams, like landfill leachates, industrial wastewater, firefighting training grounds, container-based solutions, water recycling, and soil washing. Powered by Chromafora's proprietary SAMF chemistry, SELPAXT™ integrates advanced membranes to ensure high removal rates, steady output, and a low residual waste ratio (only 0.1%[6] of the treated water volume). Frost & Sullivan notes that its superiority lies in its ability to successfully capture a wide range of PFAS variants, including challenging short-chain types that traditional methods fail to eliminate. It seamlessly integrates into existing water treatment systems and complements other applications. In addition, SELPAXT™ treated water can be repurposed as technical water, easing the strain on clean water resources. The solution further bolsters Chromafora's technological edge with lower energy consumption than other membrane technologies, such as RO, through ultrafiltration and low total organic carbon sensitivity. SELPAXT™ surpasses conventional methods e.g., activated carbon and ion exchange) in cost-effectiveness, providing clear benefits that other technologies struggle to match.

SELPAXT™ facilitates versatile installation options tailored to site-specific requirements and scalable solutions housed in ISO-certified containers. Additionally, the technology features automatic regeneration and remote monitoring, sustaining peak performance. SELPAXT™ tackles the challenges posed by short-chain—and ultra-short-chain—PFAS by using water-soluble active chemistry with a constant fresh chemical supply instead of relying on surface adsorption or solid media. The system also reduces the risk of surpassing effluent limits through an endless flow of fresh chemicals. SELPAXT™ automates regeneration at regular intervals by expelling PFAS concentrate and self-cleaning, bypassing manual intervention while delivering frictionless, uninterrupted operations. Notably, SELPAXT™ only needs basic pre-treatment for suspended solids and hydrocarbons and is relatively insensitive to organic matter and salts, making it highly impactful for treating most landfill leachates and airport groundwaters. Moreover,

[5] White paper: *SELPAXT™ PFAS Removal Technology Technical Insight* (Chromafora, August 2024)
[6] https://selpaxt.com/technology

it produces an easy-to-pump and transport liquid concentrate, which can be disposed of at landfills when pre-stabilized.[7]

Chromafora has a compelling use case portfolio for SELPAXT™, proving its excellence and broad applicability. For example, a waste management plant in Sweden faced the problem of exceptionally high levels (90% to 95%) of short-chain PFAS in the landfill leachate. After an extensive two-year search, screening over 30 suppliers, and testing 10 different solutions without success, the customer opted for SELPAXT™. Since September 2023, the system has been operational onsite, with full-scale analysis confirming the lab-scale reduction of short-chain PFAS, validating SELPAXT's exceptional performance.[8]

> *"After screening over 30 suppliers and testing around ten technologies over two years without success, we finally found a solution with Chromafora"*
>
> ***- Senior R&D Manager at a waste management plant in Sweden***

A landfill in Flanders, Belgium is also removing high amounts of PFAS with Chromafora's technology. After the system started running in the fall of 2023, an initial analysis confirmed a 97% reduction of PFAS in the facility's leachate.[9] Frost & Sullivan feels that this marks a key milestone for Chromafora, highlighting SELPAXT™'s international commercialization success.

Chromafora prioritizes continuous growth and advancement, securing projects that strengthen its brand recognition, market position, and industry relations. In December 2024, the company received a €22.5 million loan from the European Investment Bank to advance technology that eliminates PFAS from water. The loan enables Chromafora to develop and install water-treatment units across Europe between 2024 and 2028.

> *"Frost & Sullivan recognizes that Chromafora is at the forefront of addressing the issue of PFAS contamination, establishing new benchmarks in water treatment technologies, and paving the way for cleaner, cost-efficient, and streamlined industrial practices."*
>
> ***- Fredrick Royan***
> ***Practices Area Leader, Sustainability and Circular Economy***

Frost & Sullivan acknowledges that SELPAXT™ is a breakthrough in PFAS treatment, empowering customers with superior quality and results. Chromafora's technology combines advanced filtration and proprietary chemistry to effectively address complex water contamination challenges. It delivers unmatched removal rates, optimized power usage, seamless scalability, operational efficiency, cost-effectiveness, and long-term sustainability.

[7] *White paper: SELPAXT™ PFAS Removal Technology Technical Insight* (Chromafora, August 2024)
[8] SELPAXT – Case Study (Courtesy of Chromafora)
[9] https://www.ragnsells.com/about-us/press-media/articles/Chromafora-PFAS-removal-belgium-beyond/

Conclusion

Harnessing 15 years of industry knowledge, research and development, and technological commitment, Chromafora is revolutionizing per- and polyfluoroalkyl substances (PFAS) water treatment, establishing new benchmarks with its cost-effective, high-performing SELPAXT™ technology. This game-changing solution integrates Chromafora's proprietary Surfactant-ligand Assisted Membrane Filtration chemistry, ultrafiltration, automatic regeneration, and remote monitoring to deliver unsurpassed, tangible customer benefits that conventional solutions cannot duplicate easily. SELPAXT™ is a one-stop solution for many complex industry challenges, bolstering Chromafora's competitive edge.

Chromafora's recent €22.5 million loan from the European Investment Bank underscores its technology's success, quality, and reliability. With the regulatory landscape continuously evolving and pressures tightening, many industries are seeking more cost-efficient and future-proof PFAS water treatment solutions; Frost & Sullivan concludes that Chromafora is well-positioned to meet and exceed their demands with its disruptive technology.

With its strong overall performance, Chromafora earns the 2025 Frost & Sullivan Global New Product Innovation Recognition in the PFAS water treatment industry.

About Frost & Sullivan

Frost & Sullivan is the Growth Pipeline Company™. We power our clients to a future shaped by growth. Our Growth Pipeline as a Service™ provides the CEO and the CEO's growth team with a continuous and rigorous platform of growth opportunities, ensuring long-term success. To achieve positive outcomes, our team leverages over 60 years of experience, coaching organizations of all types and sizes across 6 continents with our proven best practices. To power your Growth Pipeline future, visit Frost & Sullivan at http://www.frost.com.

The Growth Pipeline Generator™

Frost & Sullivan's proprietary model to systematically create ongoing growth opportunities and strategies for our clients is fuelled by the Innovation Generator™.

Learn more.

Key Impacts:

- **Growth Pipeline:** *Continuous Flow of Growth Opportunities*
- **Growth Strategies:** *Proven Best Practices*
- **Innovation Culture:** *Optimized Customer Experience*
- **ROI & Margin:** *Implementation Excellence*
- **Transformational Growth:** *Industry Leadership*

The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

Analytical Perspectives:

- Megatrend (MT)
- Business Model (BM)
- Technology (TE)
- Industries (IN)
- Customer (CU)
- Geographies (GE)