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The Global Market for Chemical Recycling and Dissolution of Plastics 2024-2040

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Abstracts

The global plastics industry is facing a growing challenge - the need to address the environmental impact of plastic waste. As traditional waste management methods struggle to keep pace, advanced chemical recycling and dissolution technologies have emerged as a crucial solution to transform the industry towards a more sustainable, circular model. This comprehensive market report provides an in-depth analysis of the rapidly evolving landscape of chemical recycling and dissolution, offering stakeholders a roadmap to navigate this transformative shift.

The report begins by examining the global production and use of plastics, highlighting the importance of this material in modern society, as well as the issues associated with its widespread adoption. It delves into the rise of bio-based and biodegradable plastics, as well as the growing problem of plastic pollution and the policy and regulatory responses shaping the industry. At the heart of this report lies a detailed analysis of the advanced chemical recycling market, exploring the key drivers and trends that are propelling its growth. The report tracks the industry's dynamic developments, funding, and capacity expansions from 2020 to 2024, painting a comprehensive picture of the competitive landscape.

A critical comparative analysis of mechanical and chemical recycling is presented, underscoring the advantages and limitations of each approach. The report then provides an in-depth forecast of global polymer demand segmented by recycling technology, polymer type, and geographic region, offering stakeholders valuable insights to guide their strategic decision-making.

The report delves into the various advanced recycling technologies, including pyrolysis, gasification, dissolution, and depolymerization, providing a thorough examination of

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their technical attributes, applications, market forecasts, and leading industry players. It also explores emerging trends, such as the recycling of thermoset materials and the chemical recycling of textiles, highlighting the industry's continuous evolution.

The report provides an in-depth exploration of the key advanced recycling technologies, including:

1. Pyrolysis: Leveraging thermal decomposition to convert plastic waste into valuable petrochemical products, along with the application of catalytic pyrolysis and the co-processing of biomass and plastic waste.

2. Gasification: Employing high-temperature, oxygen-limited processes to convert plastic waste into synthesis gas, which can be further processed into fuels, chemicals, or renewable natural gas.

3. Dissolution: Utilizing solvents to selectively dissolve and separate specific polymers from plastic waste, enabling the recovery of high-purity materials.

4. Depolymerization: Utilizing various chemical processes, such as hydrolysis, enzymolysis, methanolysis, and glycolysis, to break down polymers into their constituent monomers for reuse.

For each technology, the report provides a technical overview, market forecasts, SWOT analysis, and the leading industry players and their current and planned capacities.Additionally, the report explores emerging advanced recycling approaches, including hydrothermal cracking, microwave-assisted pyrolysis, plasma technologies, and the recycling of thermoset materials and carbon fibers, highlighting the continued innovation in this dynamic market.

The report projects the global demand for chemically recycled plastics to grow significantly, outpacing the growth of mechanically recycled plastics in key applications. This trajectory is driven by the increasing adoption of advanced recycling technologies, the need for higher-quality recycled content, and the rising demand for sustainable materials across diverse industries.

The global demand for chemically recycled plastics is analyzed across key regions, including Europe, North America, South America, Asia, Oceania, and Africa. The report provides detailed forecasts of polymer demand by recycling technology for each region, equipping stakeholders with a comprehensive understanding of the geographic

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dynamics shaping the industry.

The report examines the life cycle assessments of advanced chemical recycling processes, comparing the environmental impacts and resource efficiency with traditional virgin plastic production and mechanical recycling. This analysis empowers stakeholders to make informed decisions and communicate the sustainability benefits of their products. The report also addresses the key challenges facing the advanced chemical recycling market, including technological limitations, feedstock availability, regulatory hurdles, and economic barriers, providing a balanced perspective on the industry's growth trajectory.

The report concludes with an extensive company profiling section, featuring over 160 leading players in the chemical recycling and dissolution market. This comprehensive industry landscape covers the technology developers, equipment manufacturers, chemical producers, and waste management companies driving the transformation of the plastics value chain. Each company profile provides detailed information on the organization's technology, capacity, strategic initiatives, and market positioning, equipping stakeholders with the necessary insights to identify potential partners, competitors, and investment opportunities. Companies profiled include Agilyx, APK?AG, Aquafil, Carbios, Eastman, Extracthive, Fych Technologies, Garbo, gr3n SA, Hyundai Chemical Ioniqa, Itero, Licella, Mura Technology, revalyu Resources GmbH, Plastogaz SA, Plastic Energy, Polystyvert, Pyrowave, RePEaT Co., Ltd., Synova and SABIC (full list of companies profiled in table of contents).

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