

Plastic Waste Pyrolysis Oil Market Forecasts to 2032 – Global Analysis By Plastic Type (Polyethylene (PE), Polypropylene (PP), Polystyrene (PS) and Other Plastic Types), Pyrolysis Method (Fast Pyrolysis, Slow Pyrolysis and Catalytic Pyrolysis), Reactor Configuration, Scale of Operation, Distribution Channel, End User, and By Geography

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Abstracts

According to Statistics MRC, the Global Plastic Waste Pyrolysis Oil Market is accounted for \$310.3 million in 2025 and is expected to reach \$835.6 million by 2032 growing at a CAGR of 15.2% during the forecast period. Plastic waste pyrolysis oil is a liquid fuel produced by thermally decomposing plastic waste in an oxygen-free environment. Through pyrolysis, long-chain polymer molecules are broken down into shorter hydrocarbon chains, resulting in an oil-like substance. This oil can be refined further and used as an alternative fuel or chemical feedstock. It offers a sustainable approach to managing plastic waste while recovering energy and reducing reliance on fossil fuels.

According to a study published in *Frontiers in Energy Research*, pyrolysis of plastic waste can convert 60–80% of input material into liquid fuels, with yields reaching up to 85% under optimal fast pyrolysis conditions.

Market Dynamics:

Driver:

Rising plastic waste generation

Escalating volumes of municipal and industrial plastic waste, coupled with mounting environmental awareness and the urgent need for sustainable waste management, are intensifying industry momentum. The inability of conventional recycling and landfill solutions to address ballooning waste has led both governments and private sector stakeholders to prioritize advanced solutions like pyrolysis. By offering an alternative disposal method, the market is witnessing renewed investment and expanded capacity to meet both regulatory and environmental goals.

Restraint:

Limited commercial viability

High capital and operating costs, coupled with inconsistent feedstock quality and yield variability, challenge the economic feasibility of large-scale deployment. Additionally, uncertainties in product standardization and fluctuating market acceptance for pyrolysis-derived oils further constrain widespread commercialization. Smaller industry players especially face hurdles in accessing sufficient financing and technological expertise, making it difficult for the sector to achieve sustainable margins and robust returns on investment.

Opportunity:

Partnerships with petrochemical and energy companies

Partnerships with petrochemical and energy companies present attractive growth avenues for the market. Such collaborations provide access to established infrastructure, technical capabilities, and downstream distribution, all of which can accelerate commercialization and scaling. Strategic alliances enable sharing of expertise between innovators and established operators, promoting research in upgrading pyrolysis oil to meet industry specifications. Moreover, these partnerships can stimulate investment flows and create integrated waste management and circular economy models, further bolstering the long-term market trajectory.

Threat:

Strict emission and environmental regulations

Evolving global and regional frameworks targeting emission reduction, pollutant control,

and waste processing standards require market participants to continually upgrade processes and technologies. These regulatory demands can increase compliance costs, slow plant approvals, and raise operational risks. Companies must adapt quickly or risk falling behind, as delays or failures in meeting stringent environmental criteria may restrict market access or result in legal and financial repercussions.

Covid-19 Impact:

The Covid-19 pandemic disrupted the plastic waste pyrolysis oil market by interrupting manufacturing, halting construction of new plants, and straining global supply chains. Restrictions on movement and economic activity led to delays in waste collection and processing, while operational challenges hampered project timelines. However, the surge in single-use plastics during the pandemic also elevated waste volumes, underscoring the need for advanced recycling and waste valorization solutions as the sector recovers and scales up post-pandemic demand.

The polyethylene (PE) segment is expected to be the largest during the forecast period

The polyethylene (PE) segment is expected to account for the largest market share during the forecast period, predominantly due to its sheer abundance in global waste streams and favorable chemical properties for oil conversion. PE, used widely in packaging and consumer goods, offers high calorific value and consistent yield efficiency when utilized as pyrolysis feedstock. Its predominance among plastic waste types, resistance to mechanical recycling, and the resulting reliance on chemical recycling methods position PE as the cornerstone for volume growth within this market.

The petrochemical feedstock segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the petrochemical feedstock segment is predicted to witness the highest growth rate, spurred by increasing demand from petrochemical producers seeking sustainable alternatives to conventional crude. Upgraded pyrolysis oil can serve as a direct substitute for naphtha in the production of key olefins and derivatives, enabling large-scale integration with existing infrastructure. This trend coincides with broader industry moves toward circularity and decarbonization, accelerating adoption and fostering higher growth in petrochemical applications.

Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share, propelled by rapid industrialization, robust governmental support, and massive plastic consumption. Countries like China and India are making significant policy and investment commitments toward advanced recycling and green energy initiatives, resulting in extensive deployment of pyrolysis technologies. Furthermore, the region's concentration of plastic waste producers, favorable labor conditions, and expanding private-public partnerships reinforce its dominant position.

Region with highest CAGR:

Over the forecast period, the North America region is anticipated to exhibit the highest CAGR, driven by supportive regulatory frameworks, strong research ecosystems, and heightened corporate commitments to sustainability. Accelerated investment in waste-to-fuel infrastructure, coupled with active participation from large energy and chemical firms, is enabling rapid commercialization. As more states and provinces in the region adopt ambitious waste management and decarbonization policies, North America remains at the forefront of technological innovation and market expansion.

Key players in the market

Some of the key players in Plastic Waste Pyrolysis Oil Market include Agilyx, Plastic Energy, Quantafuel ASA, Klean Industries, New Hope Energy, Alterra Energy, LLC, APChemi Pvt. Ltd., Ensyn, Neste, OMV Group, LyondellBasell, Clariter, Bioenergy AE Cote-Nord, Nexus Circular, Brightmark, Fuenix Ecogy, Cassandra Oil, PowerHouse Energy, Agile Process Chemicals LLP, and Green Fuel Nordic Oy.

Key Developments:

In July 2025, Klean Industries Inc. ("Klean") is proud to announce the completion of a Detailed Feasibility Study (DFS) for the development of a cutting-edge, 10,000 metric tonne-per-year non-recycled plastic pyrolysis facility in Abbotsford, British Columbia. The project is being developed in partnership with Terragreen Investments Inc. (TGI). It represents a significant milestone in the effort to convert waste plastics into high-quality refinery feedstock for the production of sustainable aviation fuel (SAF) and decarbonized road fuels.

In May 2025, Klean Industries Inc. ("Klean"), a global leader in tire pyrolysis and circular economy solutions, is proud to announce the issuance of international patents under the Patent Cooperation Treaty (PCT) for its proprietary tire pyrolysis technology.

These newly granted patents protect Klean's core innovations through 2040, further securing its technological edge in the advanced recycling sector.

In March 2025, Agilyx has announced the launch of Plastyx Ltd. in collaboration with Plastic Energy founder Carlos Monreal, designed to source and supply feedstock for Europe's advanced plastic recycling market. Agilyx says that while advanced plastic recycling technologies are scaling industrially and complementing mechanical recycling, the industry's growth is constrained by the availability of consistent, high-quality feedstock. Plastyx seeks to bridge this gap by developing partnerships and material processing capabilities to ensure a reliable supply of high-quality polymers for food-grade and other high-performance packaging applications.

Plastic Types Covered:

Polyethylene (PE)

Polypropylene (PP)

Polystyrene (PS)

Other Plastic Types

Pyrolysis Methods:

Fast Pyrolysis

Slow Pyrolysis

Catalytic Pyrolysis

Reactor Configurations Covered:

Batch Pyrolysis

Continuous Pyrolysis

Scale of Operations Covered:

Small-Scale Operations

Medium-Scale Operations

Large-Scale Operations

Distribution Channels Covered:

Direct Sales

Distributors / Traders

End Users Covered:

Fuel Blending

Petrochemical Feedstock

Power Generation

Other End Users

Regions Covered:

North America

US

Canada

Mexico

Europe

Germany

UK

Italy

France

Spain

Rest of Europe

Asia Pacific

Japan

China

India

Australia

New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:

- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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