

Pyrolysis Oil - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2024 - 2029)

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Abstracts

The Pyrolysis Oil Market size is estimated at USD 0.52 billion in 2024, and is expected to reach USD 1.28 billion by 2029, growing at a CAGR of 19.71% during the forecast period (2024-2029).

The COVID-19 pandemic drastically curtailed industrial activities during 2020 and 2021 due to imposed government lockdowns and restrictions, thereby limiting the growth of the pyrolysis oil market. The chemical industry and heat and power generation sector were paralyzed owing to less raw material supply, limited working hours/labor strength, and constrained financials. This halted the adoption of pyrolysis oil, a sustainable yet unconventional fuel that dwells with storage and transportation challenges in these sectors. However, the industries have been on the recovery as well as growth tracks ever since the retraction of the pandemic in mid-2021. The recovering oil and gas, chemicals, and power sectors with increased downstream consumption due to the lifting of restrictions and the growing sustainability drive have reinstated the interests of market players in pyrolysis oil.

Over the medium term, the rising demand for eco-friendly fuel and raw material alternatives and the increasing demand for pyrolysis oil application in the generation of heat and power are the major driving factors augmenting the growth of the market studied.

On the other hand, the constraints associated with the storage, transportation, and application of pyrolysis oil are anticipated to restrain the growth of the market studied over the forecast period.

Nevertheless, the emerging applications of pyrolysis oil in biorefineries are likely to

create lucrative growth opportunities for the global market soon.

Europe emerged as the largest market for pyrolysis oil. However, Asia-Pacific is expected to record the highest CAGR during the forecast period. This dominance of Europe is attributed to the bullish demand for pyrolysis oil in combustion in boilers, upgrading of transportation, and chemical production applications.

Pyrolysis Oil Market Trends

Increasing Demand for Fuel Application

Pyrolysis oil has one of its major applications as fuel in various sectors. Pyrolysis oil has a fuel value of 50-70% of that of petroleum-based fuels and can be used as boiler fuel or upgraded to renewable transportation fuels.

Pyrolysis oil is widely used as industrial fuel to substitute furnace oil. It is mainly used in heavy industries such as construction heating, steel factories, glass factories, cement factories, power factories, boiler factories, and hotel heating.

Pyrolysis oil can be potentially used to heat boilers (as a combustion fuel), which can be used to produce electricity in the future. Further, refined or upgraded pyrolysis oil-based products can also be used in gas turbine generators and diesel generators. Currently, various nations are considering using gas turbine generators in place of coal-fired plants to produce electricity with fewer carbon emissions. Moreover, pyrolysis oil can be used as combustion fuel in various industries such as cement, steel, glass, brick plants, and others.

The growing industrialization around the globe is expected to increase the demand for boiler and, thus, boiler fuel or oil in the coming years. For instance, the refining sector in the Middle Eastern countries is being expanded even further with the construction of new refineries such as Al Zour New Refinery (USD 16 billion), ADNOC's Crude Flexibility Project (USD 3.5 billion), BAPCO Modernisation Program (USD 6 billion), and Duqm Refinery & Petrochemical Complex (USD 7 billion).

In addition to direct combustion, pyrolysis oil can be used as a feedstock for refining diesel fuel. It can be refined into diesel by a distillation machine once the pyrolysis oil is refined into diesel by a pyrolysis oil distillation machine, the obtained diesel can be used in some machinery, such as trucks, tractors, ships, and diesel generators.

Also, despite the harmful impacts caused by the usage of diesel, its demand will likely increase year-on-year globally due to increasing energy demands. For instance, according to the India Oil Market Outlook of the International Energy Agency (IEA), India's demand for diesel is expected to rise from 1.8 million barrels per day in 2023 to 2.3 million barrels per day in 2030, registering an increase of 4.5% annually.

Owing to the large volume of fuel consumed by various industrial applications, such as power, industrial boilers, diesel engines, and power generators like gas turbines, the potential demand for pyrolysis oil-based fuels is likely to increase in the forecast period.

Europe to Dominate the Market

Europe dominated the worldwide market with a significant market share and is projected to maintain its dominance during the forecast period. In Europe, pyrolysis oil is majorly used for applications such as combustion in boilers, fueling in engines and turbines, upgrading to transportation fuels, and as a renewable feedstock for chemicals and materials. The major industries in the region that leverage pyrolysis oil applications are the steel industry, the cement industry, and transportation.

France is the third largest crude steel producer among the European Union countries. Between January to October 2022, French steelmakers produced 10.54 million tons of crude steel, 10.7% less compared to the same period in 2021.

The German government is putting together various new incentives and regulations to cut carbon emissions quickly. Moreover, Germany is increasingly dependent on imports to meet its demand for oil and gas. Similarly, the country is one of the largest importers of natural gas. Imports meet 95% of their gas requirements. In order to reduce the imports in the country, the German government is offering incentives and other benefits to biofuel production in the country.

According to the Eurostat database and estimates, the European Union (EU) imports of energy products in the first three quarters of 2023 dropped by 33.9 % in average monthly values, and the net mass dropped by 7.6 % compared to the same period in 2022.

In the United Kingdom, the government has begun guidance for Biofuels and other fuel substitutes (i.e., Excise Notice 179e) from 1 April 2022, as part of which the government

is promoting the usage of various biofuels, which is likely to create demand for pyrolysis oil in the country.

The potential of pyrolysis oil production in reducing plastic waste management issues as well as in fulfilling the demand for energy used for heating applications is likely to offer a huge opportunity for the market in the country. For instance, in August 2022, Italian Company Maire Tecnimont SpA announced that its subsidiary NextChem had been awarded a Front-End Engineering Design (FEED) contract for an advanced mechanical recycling plant of municipal plastic waste in Europe to establish a recycling plant for polyolefins by the pyrolysis process, with a waste processing capacity of 75,000 tons per year.

All factors mentioned above are likely to fuel the growth of the pyrolysis oil market in Europe over the forecast period.

Pyrolysis Oil Industry Overview

The global pyrolysis oil market is fragmented, with top players holding insignificant shares to affect market demand individually. Some of the major players in the market (in no particular order) include Twence, Green Fuel Nordic Oy, Bioenergy AE Cote-Nord, New Hope Energy, and Setra Group.

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Contents

1 INTRODUCTION

- 1.1 Study Assumptions
- 1.2 Scope of the Study

2 RESEARCH METHODOLOGY

3 EXECUTIVE SUMMARY

4 MARKET DYNAMICS

- 4.1 Drivers
 - 4.1.1 Rising Demand For Environment-friendly Fuel and Raw Material Alternatives
 - 4.1.2 Increasing Demand From Heat and Power Generation Sectors
- 4.2 Restraints
 - 4.2.1 Problems Associated With Storage, Transportation, and Application of Pyrolysis Oil
- 4.3 Industry Value Chain Analysis
- 4.4 Porter's Five Forces Analysis
 - 4.4.1 Bargaining Power of Suppliers
 - 4.4.2 Bargaining Power of Buyers
 - 4.4.3 Threat of New Entrants
 - 4.4.4 Threat of Substitute Products and Services
 - 4.4.5 Degree of Competition

5 MARKET SEGMENTATION (MARKET SIZE IN VALUE)

- 5.1 Raw Material
 - 5.1.1 Waste Plastic
 - 5.1.2 Waste Rubber
 - 5.1.3 Wood
 - 5.1.4 Oil Sludge
 - 5.1.5 Other Raw Materials
- 5.2 Application
 - 5.2.1 Fuels
 - 5.2.2 Chemicals
- 5.3 Geography

5.3.1 Asia-Pacific

5.3.1.1 China

5.3.1.2 India

5.3.1.3 Japan

5.3.1.4 Thailand

5.3.1.5 Vietnam

5.3.1.6 Malaysia

5.3.1.7 Indonesia

5.3.1.8 South Korea

5.3.1.9 Rest of Asia-Pacific

5.3.2 North America

5.3.2.1 United States

5.3.2.2 Canada

5.3.2.3 Mexico

5.3.3 Europe

5.3.3.1 Germany

5.3.3.2 France

5.3.3.3 United Kingdom

5.3.3.4 Italy

5.3.3.5 NORDIC

5.3.3.6 Spain

5.3.3.7 Turkey

5.3.3.8 Russia

5.3.3.9 Rest of Europe

5.3.4 South America

5.3.4.1 Brazil

5.3.4.2 Argentina

5.3.4.3 Colombia

5.3.4.4 Rest of South America

5.3.5 Middle East and Africa

5.3.5.1 Saudi Arabia

5.3.5.2 South Africa

5.3.5.3 Morocco

5.3.5.4 Qatar

5.3.5.5 Egypt

5.3.5.6 United Arab Emirates

5.3.5.7 Nigeria

5.3.5.8 Rest of Middle East and Africa

6 COMPETITIVE LANDSCAPE

6.1 Mergers and Acquisitions, Joint Ventures, Collaborations, and Agreements

6.2 Market Share (%)**/Ranking Analysis

6.3 Strategies Adopted by Leading Players

6.4 Company Profiles

6.4.1 Alterra Energy, LLC

6.4.2 Bioenergy Ae Cote-Nord

6.4.3 Ensyn

6.4.4 Green Fuel Nordic Oy

6.4.5 Mk Aromatics Limited

6.4.6 New Energy Kft.

6.4.7 New Hope Energy

6.4.8 Nexus Circular

6.4.9 Plastic Advanced Recycling Corp.

6.4.10 PLASTIC ENERGY

6.4.11 Setra Group

6.4.12 Quantafuel ASA

6.4.13 Trident Fuels Pty Ltd.

6.4.14 Twence

7 MARKET OPPORTUNITIES AND FUTURE TRENDS

7.1 Emerging Applications in Biorefineries

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