

The Global Market for Advanced Plastics Recycling 2023-2040

<https://marketpublishers.com/r/G7CA72B6A170EN.html>

Date: April 2023

Pages: 218

Price: US\$ 1,250.00 (Single User License)

ID: G7CA72B6A170EN

Abstracts

Advanced recycling technologies that utilize heat or chemical solvents to recycle plastics into new plastics, fuels or chemicals are a key strategy for solving the global plastic problem.

Advanced chemical recycling technologies are now being developed by around 130 companies worldwide, and capacities are increasing. Companies including ExxonMobil, New Hope Energy, Nexus Circular, Eastman, Encina are planning to build large plastics recycling plants.

As well as complementing traditional mechanical recycling, advanced recycling offers benefits such as widening the range of recyclable plastic options, producing high value plastics (e.g. for flexible food packaging) and improving sustainability (using waste rather than fossil fuels for plastics production).

Report contents include:

- Overview of the global plastics and bioplastics markets.

- Market drivers and trends.

- Advanced plastics recycling industry developments 2020-2023.

- Capacities by technology.

- Market maps and value chain.

In-depth analysis of advanced plastics recycling technologies.

Advanced plastics recycling technologies covered include:

Pyrolysis

Gasification

Dissolution

Depolymerisation

Emerging technologies.

Profiles of 144 companies. Companies profiled include Agilyx, APK?AG, Aquafil, Carbios, Eastman, Extractive, Fych Technologies, Garbo, gr3n SA, Ioniqa, Itero, Licella, Mura Technology, revalyu Resources GmbH, Plastogaz SA, Plastic Energy, Polystyvert, Pyrowave, Synova and SABIC.

Contents

1 RESEARCH METHODOLOGY

2 CLASSIFICATION OF RECYCLING TECHNOLOGIES

3 INTRODUCTION

- 3.1 Global production of plastics
- 3.2 The importance of plastic
- 3.3 Issues with plastics use
- 3.4 Bio-based or renewable plastics
 - 3.4.1 Drop-in bio-based plastics
 - 3.4.2 Novel bio-based plastics
- 3.5 Biodegradable and compostable plastics
 - 3.5.1 Biodegradability
 - 3.5.2 Compostability
- 3.6 Plastic pollution
- 3.7 Policy and regulations
- 3.8 The circular economy
- 3.9 Plastic recycling
 - 3.9.1 Mechanical recycling
 - 3.9.1.1 Closed-loop mechanical recycling
 - 3.9.1.2 Open-loop mechanical recycling
 - 3.9.1.3 Polymer types, use, and recovery
 - 3.9.2 Advanced chemical recycling
 - 3.9.2.1 Main streams of plastic waste
 - 3.9.2.2 Comparison of mechanical and advanced chemical recycling

4 THE ADVANCED PLASTICS RECYCLING MARKET

- 4.1 Market drivers and trends
- 4.2 Industry developments 2020-2023
- 4.3 Capacities
- 4.4 Global polymer demand 2022-2040, segmented by recycling technology
- 4.5 Global market by recycling process
- 4.6 Chemically recycled plastic products
- 4.7 Market map
- 4.8 Value chain

4.9 Life Cycle Assessments (LCA) of advanced chemical recycling processes

4.10 Market challenges

5 ADVANCED RECYCLING TECHNOLOGIES

5.1 Applications

5.2 Pyrolysis

5.2.1 Non-catalytic

5.2.2 Catalytic

5.2.2.1 Polystyrene pyrolysis

5.2.2.2 Pyrolysis for production of bio fuel

5.2.2.3 Used tires pyrolysis

5.2.2.3.1 Conversion to biofuel

5.2.2.4 Co-pyrolysis of biomass and plastic wastes

5.2.3 SWOT analysis

5.2.4 Companies and capacities

5.3 Gasification

5.3.1 Technology overview

5.3.1.1 Syngas conversion to methanol

5.3.1.2 Biomass gasification and syngas fermentation

5.3.1.3 Biomass gasification and syngas thermochemical conversion

5.3.2 SWOT analysis

5.3.3 Companies and capacities (current and planned)

5.4 Dissolution

5.4.1 Technology overview

5.4.2 SWOT analysis

5.4.3 Companies and capacities (current and planned)

5.5 Depolymerisation

5.5.1 Hydrolysis

5.5.1.1 Technology overview

5.5.1.2 SWOT analysis

5.5.2 Enzymolysis

5.5.2.1 Technology overview

5.5.2.2 SWOT analysis

5.5.3 Methanolysis

5.5.3.1 Technology overview

5.5.3.2 SWOT analysis

5.5.4 Glycolysis

5.5.4.1 Technology overview

5.5.4.2 SWOT analysis

5.5.5 Aminolysis

5.5.5.1 Technology overview

5.5.5.2 SWOT analysis

5.5.6 Companies and capacities (current and planned)

5.6 Other advanced chemical recycling technologies

5.6.1 Hydrothermal cracking

5.6.2 Pyrolysis with in-line reforming

5.6.3 Microwave-assisted pyrolysis

5.6.4 Plasma pyrolysis

5.6.5 Plasma gasification

5.6.6 Supercritical fluids

5.6.7 Carbon fiber recycling

5.6.7.1 Processes

5.6.7.2 Companies

6 COMPANY PROFILES 91 (144 COMPANY PROFILES)

7 REFERENCES

List Of Tables

LIST OF TABLES

- Table 1. Types of recycling.
- Table 2. Issues related to the use of plastics.
- Table 3. Type of biodegradation.
- Table 4. Overview of the recycling technologies.
- Table 5. Polymer types, use, and recovery.
- Table 6. Composition of plastic waste streams.
- Table 7. Comparison of mechanical and advanced chemical recycling.
- Table 8. Market drivers and trends in the advanced plastics recycling market.
- Table 9. Advanced plastics recycling industry developments 2020-2023.
- Table 10. Advanced plastics recycling capacities, by technology.
- Table 11. Example chemically recycled plastic products.
- Table 12. Life Cycle Assessments (LCA) of Advanced Chemical Recycling Processes.
- Table 13. Challenges in the advanced recycling market.
- Table 14. Applications of chemically recycled materials.
- Table 15. Summary of non-catalytic pyrolysis technologies.
- Table 16. Summary of catalytic pyrolysis technologies.
- Table 17. Summary of pyrolysis technique under different operating conditions.
- Table 18. Biomass materials and their bio-oil yield.
- Table 19. Biofuel production cost from the biomass pyrolysis process.
- Table 20. Pyrolysis companies and plant capacities, current and planned.
- Table 21. Summary of gasification technologies.
- Table 22. Advanced recycling (Gasification) companies.
- Table 23. Summary of dissolution technologies.
- Table 24. Advanced recycling (Dissolution) companies
- Table 25. Depolymerisation processes for PET, PU, PC and PA, products and yields.
- Table 26. Summary of hydrolysis technologies-feedstocks, process, outputs, commercial maturity and technology developers.
- Table 27. Summary of Enzymolysis technologies-feedstocks, process, outputs, commercial maturity and technology developers.
- Table 28. Summary of methanolysis technologies-feedstocks, process, outputs, commercial maturity and technology developers.
- Table 29. Summary of glycolysis technologies-feedstocks, process, outputs, commercial maturity and technology developers.
- Table 30. Summary of aminolysis technologies.
- Table 31. Advanced recycling (Depolymerisation) companies and capacities (current

and planned).

Table 32. Overview of hydrothermal cracking for advanced chemical recycling.

Table 33. Overview of Pyrolysis with in-line reforming for advanced chemical recycling.

Table 34. Overview of microwave-assisted pyrolysis for advanced chemical recycling.

Table 35. Overview of plasma pyrolysis for advanced chemical recycling.

Table 36. Overview of plasma gasification for advanced chemical recycling.

Table 37. Summary of carbon fiber (CF) recycling technologies. Advantages and disadvantages.

Table 38. Retention rate of tensile properties of recovered carbon fibres by different recycling processes.

Table 39. Recycled carbon fiber producers, technology and capacity.

List Of Figures

LIST OF FIGURES

Figure 1. Global plastics production 1950-2020, millions of tons.

Figure 2. Coca-Cola PlantBottle.

Figure 3. Interrelationship between conventional, bio-based and biodegradable plastics.

Figure 4. Global production, use, and fate of polymer resins, synthetic fibers, and additives.

Figure 5. The circular plastic economy.

Figure 6. Current management systems for waste plastics.

Figure 7. Global polymer demand 2022-2040, segmented by technology, million metric tons.

Figure 8. Global demand by recycling process, 2020-2035, million metric tons.

Figure 9. Market map for advanced recycling.

Figure 10. Value chain for advanced recycling market.

Figure 11. Schematic layout of a pyrolysis plant.

Figure 12. Waste plastic production pathways to (A) diesel and (B) gasoline

Figure 13. Schematic for Pyrolysis of Scrap Tires.

Figure 14. Used tires conversion process.

Figure 15. SWOT analysis-pyrolysis for advanced recycling.

Figure 16. Total syngas market by product in MM Nm³/h of Syngas, 2021.

Figure 17. Overview of biogas utilization.

Figure 18. Biogas and biomethane pathways.

Figure 19. SWOT analysis-gasification for advanced recycling.

Figure 20. SWOT analysis-dissoluton for advanced recycling.

Figure 21. Products obtained through the different solvolysis pathways of PET, PU, and PA.

Figure 22. SWOT analysis-Hydrolysis for advanced chemical recycling.

Figure 23. SWOT analysis-Enzymolysis for advanced chemical recycling.

Figure 24. SWOT analysis-Methanolysis for advanced chemical recycling.

Figure 25. SWOT analysis-Glycolysis for advanced chemical recycling.

Figure 26. SWOT analysis-Aminolysis for advanced chemical recycling.

Figure 27. NewCycling process.

Figure 28. ChemCyclingTM prototypes.

Figure 29. ChemCycling circle by BASF.

Figure 30. Recycled carbon fibers obtained through the R3FIBER process.

Figure 31. Cassandra Oil process.

Figure 32. CuRe Technology process.

Figure 33. MoReTec.

Figure 34. Chemical decomposition process of polyurethane foam.

Figure 35. Schematic Process of Plastic Energy's TAC Chemical Recycling.

Figure 36. Easy-tear film material from recycled material.

Figure 37. Polyester fabric made from recycled monomers.

Figure 38. A sheet of acrylic resin made from conventional, fossil resource-derived MMA monomer (left) and a sheet of acrylic resin made from chemically recycled MMA monomer (right).

Figure 39. Teijin Frontier Co., Ltd. Depolymerisation process.

Figure 40. The Velocys process.

Figure 41. The Proesa Process.

Figure 42. Worn Again products.

I would like to order

Product name: The Global Market for Advanced Plastics Recycling 2023-2040

Product link: <https://marketpublishers.com/r/G7CA72B6A170EN.html>

Price: US\$ 1,250.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/G7CA72B6A170EN.html>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:
Last name:
Email:
Company:
Address:
City:
Zip code:
Country:
Tel:
Fax:
Your message:

****All fields are required**

Customer signature _____

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <https://marketpublishers.com/docs/terms.html>

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970