

OVERVIEW OF THE
EUROPEAN
THERMOPLASTIC
COMPOSITES
MARKET

DEVELOPMENT & TRENDS
FOR LONG- AND CONTINUOUS
FIBER REINFORCED PLASTICS

A STUDY OF
EUROPEAN ALLIANCE FOR THERMOPLASTIC COMPOSITES (EATC)
INDUSTRIEVEREINIGUNG VERSTÄRKT KUNSTSTOFFE (AVK)



TABLE OF CONTENTS

TABLE OF CONTENTS	2
LIST OF FIGURES	3
LIST OF ABBREVIATIONS.....	5
1 SUBJECT OF THE STUDY.....	8
1.1 ABOUT EATC.....	8
1.2 SCOPE OF THE STUDY	9
1.3 GENERAL MATERIAL SPECIFICS & ADVANTAGES OF USING COMPOSITES	9
1.4 MATERIAL SCOPE.....	12
1.5 FEATURES OF THERMOPLASTIC COMPOSITES	16
2 OVERVIEW OF THE COMPOSITES MARKET	22
2.1 DEFINITION AND HISTORY OF COMPOSITES	22
2.2 THE WORLDWIDE COMPOSITES MARKET	25
2.3 TYPICAL APPLICATIONS/VALUE CHAINS	28
2.4 THE EUROPEAN COMPOSITES MARKET	30
2.5 THE EUROPEAN THERMOPLASTIC COMPOSITES MARKET	34
2.5.1 MARKET-OVERVIEW THERMOPLASTIC COMPOSITES.....	34
2.5.2 TYPICAL APPLICATIONS & PROCESSING TECHNIQUES.....	36
3 CURRENT MARKET SITUATION INDUSTRY IN EUROPE.....	46
3.1 MACROECONOMIC DEVELOPMENT IN EUROPE	46
3.2 FACTORS INFLUENCING EUROPEAN INDUSTRIAL PRODUCTION	51
4 SPECIFIC CHALLENGES & POSSIBLE TRENDS IN THE MAIN APPLICATION INDUSTRIES.....	64
4.1 AUTOMOTIVE.....	64
4.2 NON-AUTOMOTIVE APPLICATIONS	71
4.2.1 AVIATION	71
4.2.2 WIND ENERGY.....	78
4.2.3 RAILWAY.....	80
4.2.4 SPORTS & LEISURE	84
4.2.5 ELECTRIC/ELECTRONIC MARKET	87
4.2.6 MARITIME / NAVY.....	88
5 SUSTAINABILITY & CIRCULARITY	90
5.1 BASIC UNDERSTANDING	90
5.2 COMPOSITES – A SUSTAINABLE SOLUTION	94
6 OUTLOOK & SUMMARY	102
7 ACKNOWLEDGEMENTS	105

LIST OF FIGURES

Figure 1: Thermoplastic composites production chain	8
Figure 2: Comparison of selected material properties	10
Figure 3: Average density of selected material.....	11
Figure 4: Composites are ideal for the use in harsh environment.....	11
Figure 5: Impact of fiber length on the mechanical properties.....	13
Figure 6: Differentiation short fiber vs. long fiber granulates	13
Figure 7: Impact of fiber length on the mechanical properties and production parameters	14
Figure 8: Relationship between fiber length, performance, and component complexity	15
Figure 9: Molecular structure of thermoplastics and thermosets	16
Figure 10: Average material properties of selected resin systems	19
Figure 11: Average mechanical properties of selected resin systems.....	19
Figure 12: Patent by Leo Hendrik Baekeland	23
Figure 13: Patent by Robert Kemp	23
Figure 14: Overview – GMT/LFT Market Development Europa 1981 - 2005	25
Figure 15: Evolution of the worldwide Composites Market 1960-2025	26
Figure 16: Volume of materials consumed in Mt (2024).....	27
Figure 17: Market share by resin types - 1980-2025 - in volume	28
Figure 18: Worldwide volume of composites material (application market)	29
Figure 19: Composites production volume in Europe since 2011 (in kt)	31
Figure 20: The European composites market by material system (in % and kilotonnes)	32
Figure 21: Total composites market by application area in 2025 (in %)	32
Figure 22: Market Share of different resin types by application	33
Figure 23: Development of the European thermoplastic market since 2011	34
Figure 24: European Thermoplastic Market divided by material groups.....	35
Figure 25: Development of material groups in the European thermoplastic composites market.....	36
Figure 26: Schematic representation of the LFT injection molding process.....	37
Figure 27: LFT parts in automotive (door module, spare wheel well, and frontend)	38
Figure 28: D-LFT process in combination with Injection-Molding	38
Figure 29: D-LFT process in combination with Compression-Molding	38
Figure 30: Material logistic/value chain standard vs. direct processes.....	40
Figure 31: Manufacturing process of GMT	41
Figure 32: Schematic representation of the GMT process	41
Figure 33: CFRTP Products - Organo-Sheets and tapes.....	42
Figure 34: Process flow - combination of CFRTP with injection molding	43
Figure 35: GDP development for selected countries	47
Figure 36: Annual percent growth rate GDP by selected regions	47
Figure 37: World economic outlook - growth projection.....	48
Figure 38: Percentage of manufacturing to gross added value (annually/percentage)	49
Figure 39: Evolution of EUs value of sold industrial production 2014 – 2024 (2021=100).....	50
Figure 40: Producer prices in industry, domestic market (monthly data; 2021=100).....	52
Figure 41: EU, Domestic industrial producer prices – total and main industrial groupings 2020-2024 (2021=100).....	53
Figure 42: EU, Domestic output prices for energy 2021-2024 (2021 = 100).....	54
Figure 43: Electricity price in cents (€) private households (first quarter of 2025).....	55
Figure 44: Commercial electricity prices in dollars (\$) (2024)	55
Figure 45: Exports of goods and services 2024 by countries/regions (constant 2015 US\$)	56
Figure 46: Exports of goods and services 2024 by selected countries/regions (% of GDP)	56
Figure 47: Exports of goods and services by selected countries/regions (% of GDP)	57
Figure 48: Comparison Diesel prices, liter, US \$ (01-Sep-2025).....	58
Figure 49: Spot freight rates for container freight by major routes (40ft container)	59
Figure 50: Average salaries fort production workers / machine operators in selected countries/regions	60

Figure 51: Average salaries for executives (Factory managers) in selected countries 60

Figure 52: Average annual wages in selected countries (US dollars, PPP converted, 2024) ..61

Figure 53: New passenger car registrations in the EU65

Figure 54: Already in 2011 the EATC-showcar showed a great amount of applications..... 69

Figure 55: Use of thermoplastic composites parts today..... 69

Figure 56: Example of a local reinforced door module by Brose..... 70

Figure 57: Key applications of thermoplastic composites in an aircraft.....73

Figure 58: Thermoplastic composites can play major role for future aviation.....75

Figure 59: Most common drone uses76

Figure 60: The UAV-market has high potential for the composites industry77

Figure 61: ZEBRA - 62m long prototype of a 100 % recyclable wind turbine blade.....79

Figure 62: 2025-30 annual onshore and offshore wind power installations in the EU 80

Figure 63: Examples of composite material applications in rail (by Röchling) 81

Figure 64: Examples of composite material applications in rail (by Gurit) 81

Figure 65: Composites Twin Track Cantilever – produced by Composites Braiding83

Figure 66: Composites use in bicycles.....85

Figure 67: Use of thermoplastic composites in electro/electricity applications..... 87

Figure 68: Equipment carriers made with thermoplastic composites..... 88

Figure 69: Sylvicultura oeconomica is considered one of the first works on the subject of sustainability.91

Figure 70: The three dimensions of sustainability.....92

Figure 71: Schematic model of the circular economy93

Figure 72: R-strategies for sustainability..... 94

Figure 73: Average use time for composites in different sectors.....95

Figure 74: The technology readiness level of different composites recycling technologies.97

Figure 75: ELV – attempt to make the automotive industry more circular..... 99



LIST OF ABBREVIATIONS

CAGR	Compound annual growth rate
CFRTP	Continuous fiber-reinforced thermoplastics
CFRP/CFP	Carbon fiber-reinforced plastics
CSRD	Corporate Sustainability Reporting Directive
EATC	European Alliance for Thermoplastic Composites
ELV (Directive)	End-of-life vehicles (Directive)
EPTA	European Pultrusion Technology Association
EuCIA	European Composites Industry Association
GDP	Gross domestic product
GF	Glass fiber
GFRP/GRP	Glass fiber-reinforced plastics
GMT	Glass mat-reinforced thermoplastics
KT/kt	Kilotons = 1,000 tons
LFT	Long fiber-reinforced thermoplastics
LFT-D/D-LFT	Long fiber thermoplastic direct molding
LFT-G	Long fiber-reinforced granulates
Mt	Megaton = 1,000,000 tons
MW	Megawatt = one million watts or 1,000 kilowatts (kW)
NCF	Non-crimp-fabrics
OECD	Organisation for Economic Co-operation and Development
OEM	Original equipment manufacturer
PA	Polyamide
PBT	Polybutyleneterephthalate
PET	Polyethyleneterephthalate
PEEK	Polyetheretherketone
PP	Polypropylene
PP-LGF	Polypropylene reinforced with long glass fibers
SDGs	Sustainable development goals

SGF	Short fiber reinforced granulates
TRL	Technology readiness level
UAV	Unmanned aerial vehicle/drones
UD	Uni-directional
USD	US-Dollar
VOC	Volatile organic compounds



1.

**SUBJECT
OF THE STUDY**

Fiber-reinforced thermoplastics, also known as thermoplastic composites, have become increasingly important in recent years for numerous industrial applications—from the automotive industry and aerospace to construction and sports and leisure. Their combination of high strength, low weight, and potentially good recyclability makes them a key material for sustainable and high-performance lightweight structures. At the same time, thermoplastic matrices open up new manufacturing processes, shorter cycle times, and innovative processing methods. This study was commissioned by the EATC – European Alliance for Thermoplastic Composites [www.eatc-online.org] and prepared with its technical support. It aims to provide a systematic overview of the European market for thermoplastic fiber-reinforced plastics. It examines the basic material properties and advantages of using these materials, as well as the differences between them. It also analyzes the history of their use, the current market volume, and the dominant areas of application. In addition, possible developments and future prospects are identified on the basis of relevant macroeconomic factors.

The following study has been compiled to the best of our knowledge and belief and makes no claim to correctness or completeness. Any dissemination/publication of the content and results presented without appropriate reassurance/release by the authors of the original sources is prohibited.

1.1 ABOUT EATC

This study was prepared on behalf of and with technical support from the members of the EATC. The EATC - European Alliance for Thermoplastic Composites - was formed in 2000 by leading European companies, with a concerted commitment to the technological advancement of longfiber-reinforced thermoplastics over the complete product chain:



Figure 1: Thermoplastic composites production chain

All those involved in long fiber or endless fiber thermoplastic composites decided to cooperate closely with the objective of increasing the quantity of applications and to speed up new developments.

The members of the European Alliance for Thermoplastic Composites (EATC) serve the industry with innovative and economic components and systems, realized with long fiber reinforced thermoplastics. The EATC is an expert task force of the AVK - Federation of Reinforced Plastics [www.avk-tv.de].

1.2 SCOPE OF THE STUDY

Composites are not a term for a specific material, but rather for a group of materials. One of the special characteristics of composites is the possibility of formulating the material for the respective application by combining different starting materials. The two main components of composites are fibers and matrix (plastic). Depending on the application other additives may also be added.

This study focuses on thermoplastic composites. Various types of fibers are used here. These can be for example glass fibers, natural fibers, or carbon fibers. These fibers can be present in different forms. Short fibers, long fibers, or continuous fibers are used. These are combined with a thermoplastic matrix, often polypropylene (PP) or polyamide (PA), but also high-performance thermoplastics such as polyetheretherketone (PEEK).

This study focuses on long fiber-reinforced thermoplastics (LFT), glass mat-reinforced thermoplastics (GMT) and continuous fiber-reinforced thermoplastics (CFRTP). Although short fiber-reinforced thermoplastics are the largest segment of composite processing in Europe, they differ significantly from the other materials mentioned in terms of their material properties and (load-dependent) design due to the very short fiber length in the component (less than 2 mm).