Thermoform Packaging

Market Scenario

and Competitive Landscape

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Disclaimer

Context

This analysis provides an overview of market highlights about **thermoform packaging**, with more detailed information about global market value and dynamics and its segmentations by type, material, end use with, when data are available, particular focus on the European region.

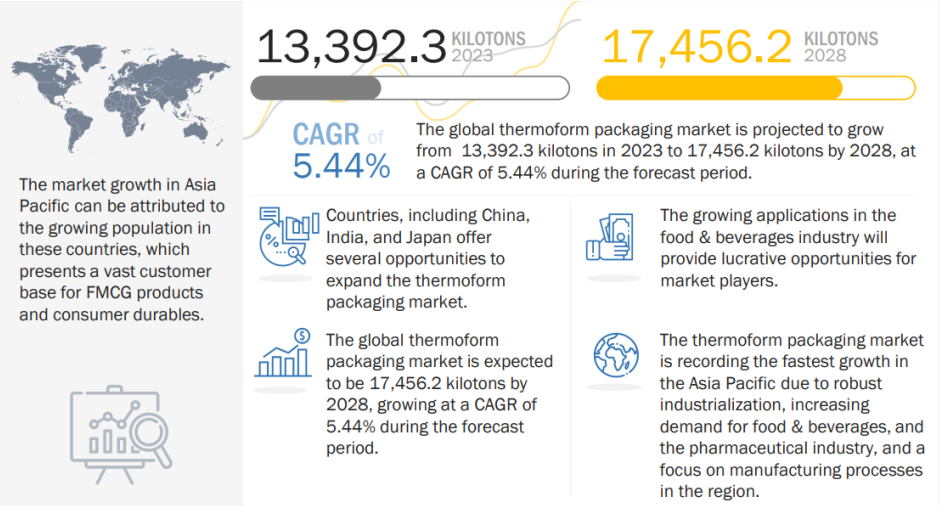
1 Thermoform Packaging

Thermoform packaging is commonly used in various industries, including food & beverages, pharmaceuticals, electronics, and home & personal care. It involves heating a plastic sheet until it becomes pliable, then forming it into a specific shape using a mold or tooling. Once the desired shape is achieved, the plastic is cooled and hardened, resulting in a rigid and durable container.

1.1 Global Market Value and Dynamics

In terms of value, the **global thermoform packaging market** is estimated at USD 52,243.6 million in 2023 and is projected to reach USD 65,616.1 million by 2028, registering a Compound Annual Growth Rate (CAGR) of 4.66% between 2023 and 2028. The Asia Pacific market is projected to grow at the highest CAGR during the forecast period. The market growth and trends in kilotons are reported in Figure 1.

Figure 1. Global Thermoform Packaging Market, in the Period 2023 - 2028



The **growth** in the market is supported by the rising pharmaceuticals and food & beverage industries and manufacturing activities (Figure 2). The increasing popularity of retail shopping and the rising consumer spending for processed & packed goods fuel the demand for thermoform packaging. Factors such as changing demographic trends and lifestyles have shifted the demand toward e-retailing channels and convenient packaging, driving the demand for thermoform packaging. Moreover, rising concerns towards environmental issues and increasing investments in developing sustainable and green packaging that can be reused and recycled will further support the growth of the thermoform packaging market, and such advancements in terms of product innovations are also expected to create strong investment **opportunities** for global players. Also emerging markets such as the Asia Pacific region have contributed to an increase in the sales of thermoform packaging products.

Figure 2. Thermoform Packaging Market: Drivers, Restraints, Opportunities and Challenges

Drivers – Rising demand for food sector

The **increasing demand for food & beverages** is expected to **increase the need for thermoform packaging**. Factors such as rising disposable income in emerging markets, **changes in consumer lifestyles**, product presentation and differentiation and rising demand for food & beverage products are expected to increase the consumption of thermoform plastic packaging. The packaging for food needs to be visually appealing, should maintain freshness, be easy to use and seal, and should provide protection during shipping and transport. As **thermoform packaging** provides better protection from moisture, bacteria, and odor than other forms, **it is ideal for packaging food for longer periods**. Thermoformed food packaging containers are also durable, stackable, provide great product visibility, and are convenient to separate by hand.

Opportunities – sustainable packaging solutions to meet growing consumer demand and preferences

We are currently facing a shift in consumer preference towards more sustainable and eco-friendly materials in the packaging industry. This trend is driven by concerns about environmental pollution and the depletion of natural resources, as well as a growing awareness of the impacts of packaging waste on the planet. Brands and manufacturers are responding to this trend by investing in research & development of **sustainable packaging** solutions, and many are making a commitment to reduce their environmental footprint. Consumers are increasingly looking for packaging made from recycled materials, such as paper, cardboard, and plastic, and are also interested in biodegradable and compostable options. They are focusing on the development and innovation of packaging techniques that require the minimal usage of PVC, which is harmful to the environment. Aluminum blister packaging offers excellent barrier properties, ensuring product integrity and protection against external factors such as moisture, light, and oxygen, making it ideal for pharmaceuticals, food, and other sensitive products. On the other hand, paper/paperboard blister packaging provides a sustainable alternative due to its renewable and biodegradable properties. Due to advancements in technology, paper-based materials can now offer comparable barrier properties to traditional plastics while being compostable or recyclable, aligning with consumer preferences for eco-friendly packaging solutions.

Challenges – environmental impact of plastics

According to the UN Environment Programme, the world produces around 330 million tons of plastic waste yearly. At least 8 million tons of plastics end up in our oceans every year and makeup 80% of all marine debris from surface waters to deep-sea sediments. Public pressure is driving brand owners and retailers to reduce the environmental impact of plastic packaging. As per OECD global plastics outlook, due to economic and demographic growth, the global usage of plastics is expected to roughly triple in 2060 from the 2019 levels. According to the World Economic Forum, the consumption of plastic is projected to skyrocket in the coming decades, from 459.7 million tons in 2019 to 1,230.6 million tons in 2060. The volume of plastics in rivers and lakes is forecast to increase from 109 million tons in 2019 to 348 million tons in 2060, while the leakage of plastics into the oceans is expected to rise from 30 million tons in 2019 to 145 million tons in 2060, thereby creating environmental hazards. This poses a major **challenge** for the thermoform packaging market.

1.1.1 Porter's Five Forces Analysis

Market dynamics could be represented also by **Porter's Five Forces** diagram (Figure 3 and following description), which provides a blueprint for understanding competitor behavior and firm's strategic positioning.

Figure 3. Porter's Five Forces Analysis of the Thermoform Packaging Market

Threat of substitutes: **HIGH**

- Various alternatives available. The threat of substitutes for thermoform packaging products is **high**, as various alternative packaging solutions are available, including flexible packaging, rigid packaging, and paper-based packaging. Substitute packaging materials include paper, metal, glass, and bioplastics. The choice of packaging material depends on cost, functionality, sustainability and product compatibility. The increasing focus on environmental concerns drives the development of sustainable alternatives, which could further threaten the market share of thermoform packaging. **Thermoform packaging manufacturers may mitigate the threat of substitutes by focusing on product differentiation and sustainability** and offering unique value propositions tailored to specific customer needs.

Bargaining power of buyers: **MODERATE**

- Large-volume purchases. **Large buyers**, such as food and beverage companies, have significant purchasing power and **can negotiate favorable pricing and terms with suppliers** as they purchase big-volume packaging products. However, smaller buyers have less leverage and may face higher prices. Buyers in industries with numerous suppliers and

relatively standardized packaging requirements may have higher bargaining power, as they can easily switch between suppliers based on price and quality.

- Few/non-availability of unique substitutes. In industries where thermoform packaging offers unique customization options or superior performance, buyers may have less bargaining power, particularly if there are few alternative solutions available.

Threat of new entrants: **MODERATE**

- Initial investment. Entering the thermoform packaging market requires significant capital investment in machinery, technology, and facilities. This poses a barrier to entry for new companies. While the technology for thermoforming is not overly complex, establishing a manufacturing facility and building brand recognition requires significant capital investment and expertise.
- Competition from established players. The competition from established players can make it challenging for new entrants to gain market share. However, low switching costs for customers and the fragmented nature of the market in certain regions can create opportunities for new players.

Bargaining power of suppliers: LOW TO MODERATE

- Easy availability of raw materials. The largest contributing factor to this large pool of players in the field is the **easy availability of raw materials**. The thermoform packaging industry is highly dependent on suppliers of raw materials, particularly plastic resins. In recent years, the industry has seen a rise in international trade and multinational companies, which have been instrumental in procuring raw materials from markets at relatively lower prices. The suppliers have moderate bargaining power, but the availability of substitutes and the ability to switch suppliers limit their overall power.

(leading to) **Intensity of competitive rivalry: HIGH**

- Strong presence of a few players. Key players within the industry compete for market share, innovation, and customer relationships. The thermoform packaging market is fragmented, with numerous players of varying sizes, which intensifies competition on price, quality, innovation, and customer service. Additionally, the presence of large, established companies with global reach can put pressure on smaller players.
- Product differentiation. The thermoform packaging market has witnessed various innovations, customizations, and product developments. Buyers are looking for products designed specifically for their needs, and many suppliers are willing to fulfill their requirements at low costs. These products are priced at competitive rates, which increases the competitive rivalry among players.

1.1.2 The Market Ecosystem Map

An **ecosystem map** visually represents the network of companies operating in a specific market, depicting the major members, including raw material suppliers, manufacturers and end users. The entities within the ecosystem are interconnected and interdependent, influencing each other's through both collaboration and competition.

Figure represents the thermoform packaging market major entities and their role in the ecosystem:

- **Raw material suppliers**: Mondi plc, Du Pont De Nemours, International Paper, Dow Chemical Company, Lyondell Basell Industries, BASF SE, SABIC, ExxonMobil Chemical Company and Hindalco Industries Limited.
- **Manufacturers**: Amcor Limited, Sealed Air Corporation, Sonoco Products Company, DS Smith, Constantia Flexibles, WestRock Company, Huhtamäki Oyj, Anchor Packaging Inc., Display Pack Inc., TekniPlex, Dart Container Corporation and Sinclair & Rush, Inc.
- **End user**: Merck & Co., Himalaya Wellness Company, Samsung Electronics Co. Ltd., Pfizer and Mars Wrigley Confectionery.

Figure 4. Thermoform Packaging Market Ecosystem

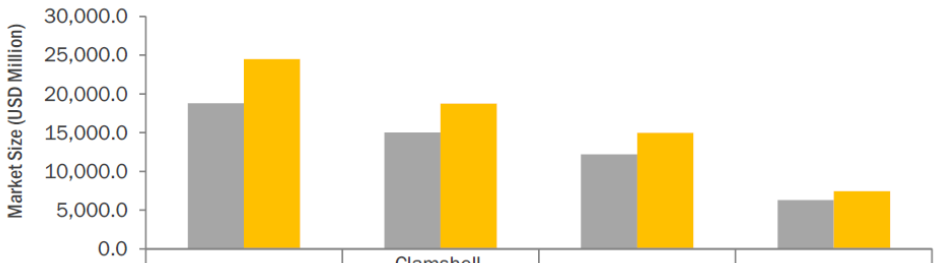
Please note that **adjacent technologies** available in the field of packaging include:

- **RFID and NFC tags**: embedding these tags into thermoform packaging allows tracking and tracing throughout the supply chain, enhancing product visibility, inventory management, and potential anti-counterfeiting measures.
- **Printed electronics**: Integrating printed sensors and circuits into packaging enables functionalities like monitoring product freshness, temperature, or tampering, providing valuable insights for consumers and manufacturers.

1.2 Market Segmentation by Type

The global market for thermoform packaging is segmented into **blister packaging, clamshell packaging, and skin packaging and others** (windowed packaging, cups, tubs, and trays) (Figure 3). Thermoform packaging protects from dust, moisture, light, and other environmental influences. It is tamper-resistant and increases the shelf life of the packed product. The thermoform packaging is selected based on the design, product to be packed, and strength of the packed product.

Figure 3. Thermoform Packaging Market, by Type, in the Period 2023 – 2028 (USD Million)



	Blister Packaging	Clamshell Packaging	Skin Packaging	Other types
2023	18,769.1	15,001.8	12,191.0	6,281.7
2028	24,490.0	18,742.2	14,959.5	7,424.5
CAGR (2023-2028)	5.47%	4.55%	4.18%	3.40%

Blister packaging dominated the thermoform packaging market by type in 2023. The blister packaging segment is estimated to account for a market value of USD 18,769.1 million in 2023; it is projected to register a CAGR of 5.47% between 2023 and 2028. The blister packaging segment is projected to record the fastest growth during the forecast period due to its ability to form various shapes, stack many products, easily handle, and have excellent damage prevention

properties. Moreover, the increasing demand for consumer durables, pharmaceuticals, and food & beverages supports the growth of blister packaging.

Blister packaging is a transparent, portable package with a flat base and raised plastic cover; it is moisture-resistant, protecting the product from damage. Blister packaging is used in various industries, such as healthcare, industrial goods, and consumer goods. It is widely used in healthcare products such as tablets and medical devices, as it protects the product from moisture and light, thus extending the shelf life of products. Blister packaging is also used to pack industrial goods and related items, allowing a fixed alignment of products within the package. It secures loose products over the base substrate, thus preventing the loss of the products. Transparent thermoformed plastic packaging allows instant product recognition at retail stores; hence, the market witnesses enhanced consumer convenience and increased product sales.

In terms of volume, **clamshell packaging** accounted for the second-largest estimated share in the thermoform packaging market in 2023. It is projected to register a CAGR of 4.55% during the forecast period. Clamshell packaging is projected to witness a CAGR of 5.36% between 2023 and 2028 in terms of volume.

The hinged blister known as **clamshell** is used for various products. It is a security package to deter package pilferage for small, high-value items, such as consumer electronics. It consists of one sheet folded onto it and sometimes fused at the edges. The blister can be securely heat-sealed, making it difficult to open by hand to prevent tampering. Clamshells are made of shaped plastic materials such as polystyrene, polyester, and PVC and provide necessary protection against harmful light, dirt, and wear & tear. Clamshells can be considered premium packaging due to the nature of the thermoformed plastic they are made out of, with strong visual impact due to their rigidity and durability. This further aids in the customers' purchase decisions.

In terms of value, **skin packaging** is projected to grow at a CAGR of 3.40% from 2023 to 2028.

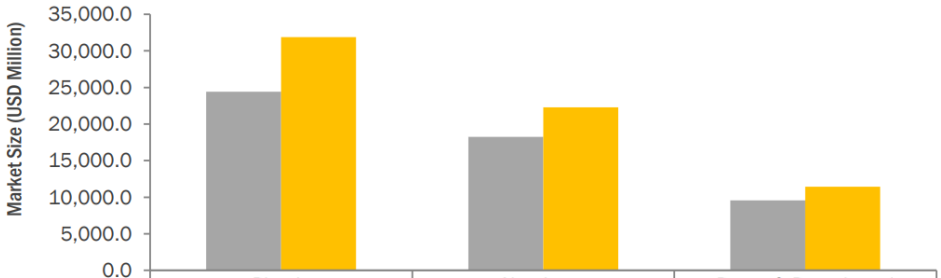
Skin packaging is wrapping a product that is irregular in shape with a flexible plastic film. The product is placed over a thermoform base substrate such as a paperboard or tray, after which the flexible film is heated and wrapped over the product in connection with the base substrate, thereby offering high visibility to the product. Skin packaging is used in various industries, such as food & beverage, consumer goods, and industrial goods. It is widely used in the food sector as it increases the shelf life of products, thus preventing food loss. It is used for packaging industrial and related goods as it fixes the product position and enhances its shape.

The **other** thermoform packaging types include windowed packaging, cups, tubs, and trays. Windowed thermoform packaging provides an attractive method of displaying the products, thereby popularizing and raising their demand and sales. Thermoformed trays are highly durable, withstand harsh chemicals, and resist abrasion. These trays are used in various industries, such as food packaging, healthcare, electronics, and consumer products. Thermoformed plastic trays range from something as simple as a flat, one-cavity part for holding a particular product to a multi-cavity design for several pieces that go together. The materials used for manufacturing thermoformed trays are PVC, PE, and PET.

1.3 Market Segmentation by Material

The global thermoform packaging market could be segmented based on material into **plastic films, aluminum foil, and paper & paperboard** (Figure 4). Plastic films segment is further classified into the following subsegments: polymers—polyethylene (PE), polyethylene terephthalate (PET), polyvinyl chloride (PVC), polystyrene (PS), polypropylene (PP), and others such as polyester, polycarbonate, and orientated polyamide (OPA).

Figure 4. Thermoform Packaging Market, by Material, in the Period 2023 – 2028 (USD Million)



	Plastic	Aluminum	Paper & Paperboard
2023	24,424.8	18,264.5	9,554.3
2028	31,894.5	22,300.2	11,421.4
CAGR (2023-2028)	5.48%	4.07%	3.63%

In terms of value, the **plastic segment** emerged as the largest application in 2023 in the thermoform packaging market. It is projected to register a market value of USD 31,894.5 million by 2028. Plastic thermoform packaging provides excellent protection from damage, dust, and moisture. Compared to other types of material, plastic offers cost-effectiveness and is lightweight, transparent, and tamper-evident. **Aluminum** is the second-largest segment, projected to reach a market size of USD 22,300.2 million by 2028. The paper & **paperboards** segment is projected to register a CAGR of 3.63% during the forecast period.

Plastic films are made from various polymers; they can mold into the desired shape when heat or pressure is applied. Plastics are also used as a raw material to manufacture thermoform packaging, as they are durable, clean, lightweight, transparent, and cost-effective. Moreover, plastic films offer down-gauging properties, allowing manufacturers to use minimum resources to manufacture a package. Plastic films provide excellent visibility to the product in secure and attractive packaging. These films are manufactured from polymers such as polyethylene (PE), polyethylene terephthalate (PET), polyvinyl chloride (PVC), and polypropylene are widely used for thermoform packaging.

- **Polypropylene** has good resistance to almost all types of chemicals, including strong acids, alkalis, and most organic materials. It is highly elastic and has excellent barrier properties against gas and vapor. However, the material softens when it is used to store hot aromatic or halogenated solvents. Its resistance to permeation is equivalent to or slightly better than that of HDPE and is superior to that of LDPE. One of the biggest disadvantages of polypropylene is its brittleness at low temperatures. It is fragile in its purest form and must be blended with polyethylene or other materials to give it the impact resistance required for thermoform packaging. Polypropylene is recyclable for reuse in more applications than other plastics. It can be hot-filled and microwaved; hence, it is appropriate for ready meat trays, deli containers, and blister packs for medical and pharmaceutical packaging.
- **Polyethylene terephthalate (PET)** is a common type of polyester. It is a strong, transparent, lightweight, and stable polymer with an excellent barrier against moisture and gas, optimizing its use in thermoform packaging. It is specially designed to be tough and resistant to damage, and it requires heat sealing for the packaging of products. It is non-fluorescent, non-absorbent, and moisture-resistant; hence it is used in blister packages, synthetic fibers, and other thermoforming applications. PET is most commonly used for carbon dioxide in soft drink bottles. Moreover, it is safe and hygienic for direct food contact and is used in various food applications. It is used for packaging soft-gel capsules as it is a soft, odorless, and flexible material. RPET is recycled polyethylene terephthalate, which is environment friendly. RPET is most often used for clamshells. Virgin PET has higher clarity and shine and is widely used as clamshells, trays, and containers. PETG (polyethylene terephthalate glycol-modified) is a customized PET with excellent strength and impact resistance.

- **Polystyrene** is made from styrene monomer and is a petroleum-based plastic. It is used in thermoform packaging because it is strong yet lightweight, made of 95% air, and has good insulation properties. Its versatility, sterility, durability, shock absorbency, and recyclability make it appropriate for packaging various products such as CD cases and smoke detectors.
- **Polyethylene** is produced by the polymerization of ethylene and can be self-sealed under controlled heat. It is highly durable, versatile, and resistant to moisture and light. Polyethylene has a relatively poor barrier against oxygen and other gases. Low-density polyethylene (LDPE) and high-density polyethylene (HDPE) are used to manufacture blister packs. HDPE is unaffected by strong acids and alkalis, and most solvents do not react with it. It is, therefore, used in various applications and industries where high tensile strength, impact resistance, chemical and corrosion resistance, and low moisture absorption properties are required. HDPE has certain disadvantages: it lacks clarity and has a relatively high infusion rate of essential odors, flavors, and oxygen. LDPE has properties such as ease of processing, barrier to moisture, strength/toughness, flexibility, and ease of sealing; hence, it is an appropriate material for thermoform packaging.
- **PVC** has high significance among all plastics. It has high chemical resistance and dielectric properties, mechanical and flexural strength, good flexibility, low moisture absorption, excellent dimensional steadiness, and good flammability features. It is flexible, transparent, light, and protects the product. Furthermore, its oxygen and water barrier properties extend the shelf life of the product. It can be molded and modified into any desired shape. Therefore, it is popular in making thermoformed blister packs and insert trays. However, PVC has low moisture barrier property and low water-vapor permeability; it may impact the environment, as it produces highly toxic dioxins and releases hydrochloride emissions during combustion under certain conditions. Hence, to overcome the lack of barrier properties, PVA is coated or laminated with polyvinylidene chloride (PVDC) or PVC/chloro tri fluoro ethylene polymer (CTFE).
- **Other plastic films** used for thermoform packaging include polyester, polycarbonate, and oriented polyamide (OPA). Polyester shows remarkable clarity and ease in processing and is therefore used in thermoform packaging. It is also an eco-friendly substitute for traditional plastic materials. Polycarbonate is used in thermoform packaging as it is a versatile and tough plastic with high strength and less weight. OPA is used in thermoform packaging for its impact and heat-resistant properties.

Market data about **plastic material segmentations** in the thermoform packaging market are reported in Tables 1 and 2, both in USD million and kilotons.

Table 1. Plastic: Thermoform Packaging Market, by Material, 2021–2028 (USD Million)

Material	2021	2022	2023	2024	2025	2026	2027	2028	CAGR (2023–2028)
PP	6,711.8	7,141.4	7,600.3	8,090.4	8,613.9	9,173.2	9,770.6	10,408.9	6.49%
PET	8,635.1	9,101.4	9,592.9	10,110.9	10,656.9	11,232.3	11,838.9	12,478.2	5.40%
Polystyrene	2,567.7	2,691.0	2,820.2	2,955.5	3,097.4	3,246.1	3,401.9	3,565.2	4.80%
PE	2,259.6	2,361.3	2,467.5	2,578.6	2,694.6	2,815.9	2,942.6	3,075.0	4.50%
PVC	1,065.0	1,108.7	1,154.1	1,201.4	1,250.7	1,302.0	1,355.3	1,410.9	4.10%
Other Plastics	731.7	760.2	789.9	820.7	852.7	885.9	920.5	956.4	3.90%
Total	**21,970.9**	**23,163.9**	**24,424.8**	**25,757.5**	**27,166.2**	**28,655.3**	**30,229.8**	**31,894.5**	**5.48%**

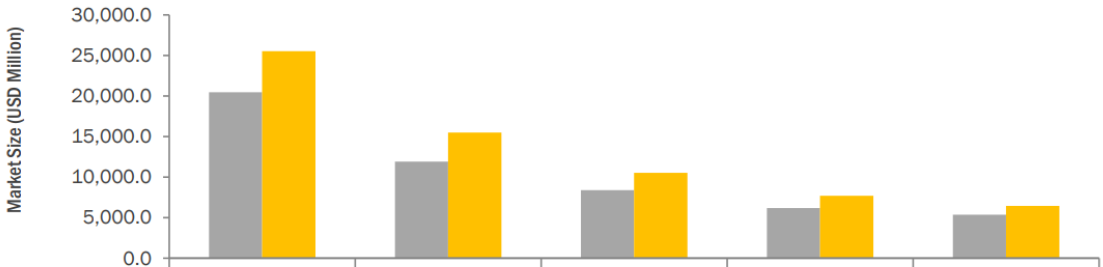
Table 2. Plastic: Thermoform Packaging Market, by Material, 2021–2028 (Kiloton)

Material	2021	2022	2023	2024	2025	2026	2027	2028	CAGR (2023-2028)
PP	2,880.3	3,088.4	3,312.1	3,552.7	3,811.3	4,089.5	4,388.6	4,710.3	7.30%
PET	2,219.8	2,339.7	2,466.0	2,599.2	2,739.6	2,887.5	3,043.4	3,207.8	5.40%
Polystyrene	611.4	640.7	671.5	703.7	737.5	772.9	810.0	848.9	4.80%
PE	551.1	575.9	601.8	628.9	657.2	686.8	717.7	750.0	4.50%
PVC	304.3	316.8	329.7	343.3	357.3	372.0	387.2	403.1	4.10%
Other Plastics	228.7	237.6	246.8	256.5	266.5	276.9	287.7	298.9	3.90%
Total	**6,795.5**	**7,199.0**	**7,628.0**	**8,084.2**	**8,569.4**	**9,085.5**	**9,634.6**	**10,218.9**	**6.02%**

1.4 Market Segmentation by End Use Industry

Thermoform packaging finds application in **food & beverages, pharmaceuticals, electronics, home & personal care, and others** (include motor vehicles/spare parts and aerospace components) (Figure 5). Thermoform packaging is widely used in the food & beverage sector as it increases the shelf life of products, thus preventing food loss. The growing pharmaceutical industry and reduced packaging waste are the main drivers for the growth of the thermoform packaging market. The pharmaceutical segment is projected to grow at the highest rate due to the aging population and rising occurrences of chronic diseases. Thermoform packaging offers high visibility to the product, which increases its marketability; hence, it is used in electronic and home & personal care.

Figure 5. Thermoform Packaging Market, by End Use Industry, in the Period 2023 – 2028 (USD Million)



	Food & Beverages	Pharmaceuticals	Electronics	Home & Personal Care	Other End-use Industries
2023	20,441.8	11,892.9	8,367.1	6,188.1	5,353.7
2028	25,506.8	15,471.8	10,517.1	7,677.2	6,443.1
CAGR (2023-2028)	4.53%	5.40%	4.68%	4.41%	3.77%

The **food & beverage industry** was the largest application of thermoform packaging in 2023, being valued at USD 20,441.8 million in terms of value. The key categories found in the food sector include **meat, poultry & seafood products, confectionery, prepared meals, and dairy products**. The food & beverage sector requires packaging for product storage, handling, and transportation. Clamshell packaging provides an appealing presentation of high-quality products through plastic film. It also reduces leakage and extends the shelf life of the product. It protects meat, poultry, and seafood products from contamination by microorganisms or toxic substances. It also provides easy-to-peel corners for customers' convenience. Thermoform packaging is estimated to experience high demand from the food & beverage sector, mainly because of the growing demand for packaged and branded products. Food is the largest end-use market for thermoformed skin packaging, with these subsegments contributing the maximum share.

The demand for thermoform packaging in the **pharmaceutical** segment is projected to grow at the highest CAGR of 5.40% from 2023 to 2028 in terms of value. The growing pharmaceutical industry and reduced packaging waste are the main drivers for the growth of the thermoform packaging market. The packaging quality of **pharmaceutical** products plays a vital role in ensuring their protection. The pharmaceutical industry needs devices in various distinctive shapes and sizes, depending on their purpose. Products in pharmaceutical markets warrant an additional level of protection and specification, which is provided by thermoformed plastic trays. Furthermore, thermoform packaging for healthcare products reduces the opportunities for product contamination. It offers durability, product protection & security, and safe & easy opening features. Pharmaceutical packaging materials require safety in transit, film clarity, and tamper resistance; these are provided by thermoformed blister packs, clamshells, and trays designed to hold medical devices from small parts to larger applications. Thermoformed plastic packaging provides the cleanliness and compartmentalization required by medical products that can safely hold them in place and provide external protection.

The **electronics** segment was the third largest, with a share of 16.0% in 2022, due to the rising consumption of these products. The **electronics** segment is one of the growing markets for thermoform packaging, as the delicate and loose parts of electronic items (such as microchips, cables, wires, and screens) require packaging that can protect them from damage and misplacement during transportation and storage. Thermoformed clamshells cover electrostatic-sensitive products. The space and robustness of thermoform packaging add to the market presence of transparent molded plastic. It also protects electronic products from dust and moisture during transit. Additionally, thermoform packaging is highly preferred in electronics, specifically for on-the-shelf retail businesses. As thermoformed packages are tamper-proof, they are suitable for packaging valuable products in high-volume stores. A thermoformed package (clamshells, blister packs, or detailed trays) can hold any small or large parts of electronic items. Thus, the increase in the consumer electronics market is fueling the growth of thermoform packaging in this industry.

Home & personal care is projected to grow at a CAGR of 4.41 % during the forecast period in terms of volume. **Home & personal care** are commonly found in health and beauty sections, which include products meant for beautification and personal hygiene, such as perfumes, room fresheners, eye and facial makeup, hair colors, and toothpaste. Thermoform packaging is more cost-efficient than rigid packaging; hence, it is used for lightweight products with higher production output. As thermoform packaging occupies less space, it is ideal for use in the retail sector. Furthermore, it is tamper-resistant and allows a full view of the product, which increases its shelf-impact and marketability. Thermoform packaging includes lipsticks, shaving kits, cosmetics & perfumes, and room fresheners. The increasing disposable income of people in developing economies allows them to spend more on home & personal care products, thereby helping the thermoform packaging industry to grow.

Other end-use industries are segmented into industrial goods such as tools & related goods, motor vehicles/spare parts, and aerospace components. Thermoform packaging is used to package industrial goods and related goods, allowing fixed alignment of goods within the package. It reduces protective packaging fillers, such as the upper plastic film and the base substrate, which protect the product from damage, making it a cost-effective packaging option. Thermoform packaging is lightweight, providing convenience for transporting tools or hardware products from one place to another. The share of this segment in the total thermoform packaging market is marginal compared to the segments studied previously.

1.5 Market Segmentation by Region

The global thermoform packaging market, by region, is segmented into: **Asia Pacific, North America, Europe, South America, and Middle East & Africa**. Asia Pacific leads the thermoform packaging market followed by North America. This is due to the increased demand for processed foods, awareness of buyers regarding sustainable packaging, and the growing healthcare industry among these regions.

Europe accounted for about 27.3% of the total thermoform packaging market in 2022 in terms of value. Countries such as Germany, UK, France, and Italy have been considered to study the European thermoform packaging market. Due to the expansion of industries and technological advancements, the thermoform packaging market in these countries is expected to grow in the coming years. Investments in research and development and technological advancements are leading the way in developing sustainable and high-quality packaging solutions, creating new opportunities for growth in the European market.

The European Union is prioritizing sustainability and has introduced comprehensive legislative proposals concerning products and services in the EU market. These proposals encompass diverse aspects, from promoting environment-friendly retail value chains to fostering product circularity, reflecting the EU's commitment to creating a more sustainable economy. **Germany** dominated the European thermoform packaging market. The food & beverage industry is Europe's largest thermoform packaging consumer. According to Germany Trade and Invest (GTAI), approximately 82 million consumers make Germany the largest food & beverage retail market in Europe. The European market is expected to witness steady growth during the forecast period due to increased spending on consumer-packed goods and development in industrial activities. This will drive the market for thermoform packaging, as it is cost-effective and increases the shelf life of products.

European market data by country, type, material and end use industry in USD million and kilotons in the period 2023 – 2028 are reported in the following Tables.

Table 3. Europe: Thermoform Packaging Market, by Country, 2021–2028 (USD Million)

Country	2021	2022	2023	2024	2025	2026	2027	2028	CAGR (2023–2028)
Germany	3,750.2	3,926.5	4,111.2	4,304.9	4,508.0	4,721.0	4,944.3	5,178.4	4.72%
Italy	2,075.4	2,154.6	2,236.9	2,322.5	2,411.5	2,504.1	2,600.4	2,700.6	3.84%
France	1,782.9	1,862.7	1,946.2	2,033.5	2,124.9	2,220.5	2,320.5	2,425.2	4.50%
UK	1,373.3	1,429.6	1,488.2	1,549.4	1,613.2	1,679.8	1,749.1	1,821.4	4.12%
Rest of Europe	4,121.9	4,280.5	4,445.3	4,616.4	4,794.2	4,978.8	5,170.6	5,369.8	3.85%
Total	13,103.7	13,653.8	14,227.8	14,826.7	15,451.8	16,104.1	16,784.9	17,495.4	4.22%

Table 4. Europe: Thermoform Packaging Market, by Country, 2021–2028 (Kiloton)

Country	2021	2022	2023	2024	2025	2026	2027	2028	CAGR (2023–2028)
Germany	835,3	881	929,3	980,4	1,034.3	1,091.3	1,151.5	1,215.1	5.51%
Italy	467,8	488,4	510	532,6	556,2	580,9	606,8	633,9	4.45%
France	367,2	386,4	406,6	427,9	450,4	474,1	499,1	525,4	5.26%
UK	295	309,1	323,9	339,5	355,8	372,9	390,9	409,8	4.81%
Rest of Europe	982	1,026.3	1,072.6	1,121.0	1,171.5	1,224.4	1,279.7	1,337.5	4.51%
Total	2,947.3	3,091.2	3,242.4	3,401.3	3,568.2	3,743.6	3,927.9	4,121.6	4.92%

Table 5. Europe: Thermoform Packaging Market, by Type, 2021–2028 (USD Million)

Type	2021	2022	2023	2024	2025	2026	2027	2028	CAGR (2023–2028)
Blister Packaging	4,391.4	4,607.4	4,834.2	5,072.4	5,322.5	5,585.2	5,861.0	6,150.6	4.93%
Clamshell Packaging	3,821.1	3,981.5	4,148.7	4,323.0	4,504.6	4,693.9	4,891.2	5,096.8	4.20%
Skin Packaging	3,226.3	3,350.3	3,479.2	3,613.1	3,752.1	3,896.6	4,046.7	4,202.7	3.85%
Other Types	1,664.9	1,714.5	1,765.6	1,818.3	1,872.5	1,928.4	1,986.0	2,045.3	2.99%
Total	13,103.7	13,653.8	14,227.8	14,826.7	15,451.8	16,104.1	16,784.9	17,495.4	4.22%

Table 6. Europe: Thermoform Packaging Market, by Type, 2021–2028 (Kiloton)

Type	2021	2022	2023	2024	2025	2026	2027	2028	CAGR (2023–2028)
Blister Packaging	925,3	978,7	1,035.2	1,095.0	1,158.3	1,225.3	1,296.3	1,371.5	5.79%
Clamshell Packaging	846,1	887,8	931,5	977,4	1,025.5	1,076.1	1,129.1	1,184.8	4.93%
Skin Packaging	757,2	791,4	827,2	864,6	903,8	944,7	987,5	1,032.2	4.53%
Other Types	418,7	433,4	448,6	464,3	480,6	497,5	515	533,1	3.51%
Total	2,947.3	3,091.2	3,242.4	3,401.3	3,568.2	3,743.6	3,927.9	4,121.6	4.92%

Table 7. Europe: Thermoform Packaging Market, by Material, 2021–2028 (USD Million)

Applications	2021	2022	2023	2024	2025	2026	2027	2028	CAGR (2023–2028)
Plastic	5,396.6	5,675.5	5,968.8	6,277.1	6,601.2	6,941.8	7,299.9	7,676.3	5.16%
Aluminum	4,922.1	5,103.6	5,291.8	5,486.9	5,689.3	5,899.2	6,116.8	6,342.5	3.69%
Paper & Paperboard	2,785.0	2,874.6	2,967.2	3,062.7	3,161.3	3,263.1	3,368.2	3,476.6	3.22%
Total	13,103.7	13,653.8	14,227.8	14,826.7	15,451.8	16,104.1	16,784.9	17,495.4	4.22%

Table 8. Europe: Thermoform Packaging Market, by Material, 2021–2028 (Kiloton)

Applications	2021	2022	2023	2024	2025	2026	2027	2028	CAGR (2023–2028)
Plastic	1,627.7	1,717.5	1,812.3	1,912.4	2,018.1	2,129.9	2,247.8	2,372.5	5.53%
Aluminum	739,6	771,8	805,3	840,3	876,9	915	954,8	996,4	4.35%
Paper & Paperboard	580	602	624,8	648,5	673,2	698,7	725,3	752,8	3.80%
Total	2,947.3	3,091.2	3,242.4	3,401.3	3,568.2	3,743.6	3,927.9	4,121.6	4.92%

Table 9. Europe: Thermoform Packaging Market, by End-Use Industry, 2021–2028 (USD Million)

End-use Industry	2021	2022	2023	2024	2025	2026	2027	2028	CAGR (2023–2028)
Food & Beverages	4,953.5	5,138.8	5,331.4	5,531.5	5,739.5	5,955.6	6,180.3	6,413.9	3.77%
Pharmaceuticals	2,949.6	3,100.8	3,259.8	3,426.9	3,602.6	3,787.3	3,981.6	4,185.9	5.13%
Electronics	2,095.5	2,188.5	2,285.6	2,387.1	2,493.0	2,603.7	2,719.3	2,840.1	4.44%
Home & Personal Care	1,579.9	1,646.0	1,714.9	1,786.7	1,861.5	1,939.4	2,020.6	2,105.2	4.19%
Other End-use Industries	1,525.1	1,579.6	1,636.1	1,694.6	1,755.2	1,817.9	1,883.0	1,950.3	3.58%
Total	13,103.7	13,653.8	14,227.8	14,826.7	15,451.8	16,104.1	16,784.9	17,495.4	4.22%

Table 10. Europe: Thermoform Packaging Market, by End-Use Industry, 2021–2028 (Kiloton)

End-use Industry	2021	2022	2023	2024	2025	2026	2027	2028	CAGR (2023–2028)
Food & Beverages	1,208.0	1,260.9	1,316.1	1,373.9	1,434.4	1,497.6	1,563.8	1,633.0	4.41%
Pharmaceuticals	617,6	654,8	694,2	735,9	780,2	827,2	877	929,8	6.02%
Electronics	422,3	444,4	467,5	491,9	517,6	544,6	573	602,9	5.22%
Home & Personal Care	349,9	367,1	385,2	404,2	424	444,9	466,8	489,8	4.92%
Other End-use Industries	349,4	364,1	379,4	395,3	411,9	429,2	447,3	466,1	4.20%
Total	2,947.3	3,091.2	3,242.4	3,401.3	3,568.2	3,743.6	3,927.9	4,121.6	4.92%

Segmentation by European Countries

Germany (Table 11) is estimated to be the largest consumer of thermoform packaging in Europe and accounted for a 28.8% share, in terms of value, of the market in 2022. According to Germany Trade & Invest (GTAI), Germany has Europe's largest food processing industry and is the fourth largest industrial sector. As thermoform packaging is used for shipping processed foods, its use in the region is high. The growing pharmaceutical and food & beverage industries are expected to drive the demand for thermoform packaging in the coming years. The country's large consumer base, overall positive economic environment, increase in manufacturing activities, and rise in domestic and international consumer demand are expected to drive the packaging industry. Germany stands as Europe's primary pharmaceutical market and the fourth largest globally. Fueled by factors like demographic shifts, heightened prevalence of chronic ailments, and a growing focus on preventative measures and self-care, the pharmaceutical sector in Europe's largest market is outpacing the country's economic growth. Germany hosts over 600 pharmaceutical firms, with small and medium-sized enterprises (SMEs) serving as the fundamental pillars of this economic domain.

As per the International Monetary Fund, **Italy** is ranked tenth globally in terms of GDP in 2022. Increased demand from the retail, food, and healthcare industries is the prime factor driving the market. During the forecast period, the healthcare industry is projected to grow due to the increasing aging population, increase in life expectancy, and rise in the prevalence of chronic diseases, which, in turn, is expected to increase the demand for pharmaceutical & medical products. As per the International Trade Administration, the number of Italian web shoppers is on a steady rise, with 93% of the population now having an online presence. E-commerce sales will boost the thermoform packaging market.

Table 11. Germany: Thermoform Packaging Market, by Selected Sub-Segments, 2021–2028 (USD Million)

	2021	2022	2023	2024	2025	2026	2027	2028	CAGR (2023–2028)
Type									
Blister Packaging	1,277.2	1,349.5	1,425.9	1,506.6	1,591.9	1,682.0	1,777.2	1,877.8	5.66%
Clamshell Packaging	1,074.4	1,123.4	1,174.5	1,228.1	1,284.0	1,342.5	1,403.7	1,467.6	4.56%
Skin Packaging	894.8	933.6	974.1	1,016.3	1,060.3	1,106.3	1,154.3	1,204.3	4.34%
Other Types	503.8	520.0	536.7	554.0	571.8	590.1	609.1	628.7	3.21%
Material									
Plastic	1,752.8	1,853.4	1,959.5	2,071.6	2,190.1	2,315.1	2,447.1	2,586.6	5.71%
End Use Industry									
Food & Beverage	1,411.4	1,474.3	1,540.1	1,608.9	1,681.1	1,756.6	1,835.7	1,918.6	4.49%
Pharmaceuticals	904.9	954.5	1,006.9	1,062.1	1,120.3	1,181.7	1,246.5	1,314.8	5.48%
Electronics	619.6	649.1	679.9	712.2	746.1	781.5	818.7	857.6	4.75%
Home & Personal Care	463.2	484.0	505.6	528.3	552.0	576.7	602.6	629.6	4.48%
Others	351.0	364.6	378.7	393.4	408.6	424.4	440.8	457.9	3.87%

Table 12. Italy: Thermoform Packaging Market, by Selected Sub-Segments, 2021–2028 (USD Million)

	2021	2022	2023	2024	2025	2026	2027	2028	CAGR (2023–2028)
Type									
Blister Packaging	716,8	750	784,8	821,2	859,4	899,2	941	984,7	4.64%
Clamshell Packaging	598,8	623,3	648,8	675,3	702,9	731,7	761,6	792,7	4.09%
Skin Packaging	498,6	514,1	530,1	546,6	563,6	581,2	599,2	617,9	3.11%
Other Types	261,2	267,1	273,1	279,3	285,6	292	298,6	305,3	2.25%
Material									
Plastic	894.9	930.9	968.4	1,007.6	1,048.5	1,091.3	1,135.9	1,182.4	4.07%
End Use Industry									
Food & Beverage	806.9	827.2	847.8	868.7	890.1	911.8	933.9	956.4	2.44%
Pharmaceuticals	463.4	487.9	513.7	540.9	569.5	599.7	631.4	664.8	5.29%
Electronics	334.6	350.0	366.0	382.8	400.3	418.7	437.9	458.0	4.59%
Home & Personal Care	253.2	264.2	275.6	287.5	300.0	312.9	326.5	340.6	4.33%
Others	217.3	225.4	233.8	242.5	251.6	261.0	270.7	280.8	3.73%

France is one of the largest economies in Europe in terms of GDP and is considered a competitive hub for research & development activities for manufacturers in various industries. The French thermoform packaging market is driven by demand from industries such as food & beverage, cosmetic & toiletry, home & personal care, and consumer goods. The growing pharmaceutical industry has further accelerated the demand for thermoform packaging in France. The growth of the aging population, health concerns, continuous technological advancements, and product innovations are expected to strengthen the demand from the pharmaceutical and medical sectors, further driving the market's growth during the forecast period. The increase in purchasing power and the flourishing manufacturing industry highlight the rising consumption levels in the country; this is expected to stimulate the growth of the thermoform packaging market during the forecast period. The increasing aging population, health concerns, rapid technological advancements, and product innovation are expected to further strengthen the market during the forecast period due to the increasing demand from the pharmaceutical and medical sectors.

Table 13. France: Thermoform Packaging Market, by Selected Sub-Segments, 2021–2028 (USD Million)

	2021	2022	2023	2024	2025	2026	2027	2028	CAGR (2023–2028)
Type									
Blister Packaging	581.6	613.2	646.6	681.7	718.8	757.9	799.2	842.6	5.44%
Clamshell Packaging	520.4	543.4	567.4	592.5	618.7	646.1	674.6	704.4	4.42%
Skin Packaging	451.7	469.9	488.9	508.6	529.1	550.5	572.7	595.8	4.04%
Other Types	229.2	236.2	243.3	250.6	258.2	266.0	274.0	282.3	3.02%
Material									
Plastic	787.5	832.2	879.3	929.0	981.4	1,036.6	1,094.8	1,156.2	5.63%
End Use Industry									
Food & Beverage	728.3	761.0	795.2	831.1	868.7	908.1	949.3	992.6	4.53%
Pharmaceuticals	377.3	396.6	416.8	438.1	460.5	484.0	508.7	534.7	5.11%
Electronics	272.4	284.4	297.0	310.2	323.9	338.2	353.2	368.8	4.43%
Home & Personal Care	206.1	214.7	223.7	233.0	242.7	252.9	263.4	274.4	4.17%
Others	198.8	206.0	213.4	221.1	229.0	237.3	245.8	254.7	3.60%

The **UK** is one of the leading economies in Europe. Changing consumer lifestyles have increased the demand for convenience food, which strengthens the thermoform packaging market. Rising exports of food and the increasing demand for convenience food also offer opportunities for market growth. The market growth in the UK is expected to be supported by the increased spending on healthcare products, and thus, the industry is one of the largest consumers of thermoform packaging. Changing demographic trends such as the rising aging population and rising awareness about healthcare and increasing expenditure support the growth of the industry. This is expected to boost the demand for pharmaceutical and medical products, further supporting the growth of the thermoform packaging industry.

Table 14. UK: Thermoform Packaging Market, by Selected Sub-Segments, 2021–2028 (USD Million)

	2021	2022	2023	2024	2025	2026	2027	2028	CAGR (2023–2028)
Type									
Blister Packaging	447.9	469.9	493.1	517.4	542.9	569.7	597.8	627.2	4.93%
Clamshell Packaging	400.9	418.4	436.6	455.7	475.6	496.3	517.9	540.5	4.36%
Skin Packaging	350.9	363.0	375.5	388.4	401.8	415.6	429.9	444.7	3.44%
Other Types	173.6	178.2	183.0	187.9	193.0	198.2	203.5	209.0	2.69%
Material									
Plastic	524.9	552.3	581.1	611.4	643.3	676.8	711.9	748.9	5.20%
End Use Industry									
Food & Beverage	479.2	497.1	515.8	535.2	555.4	576.4	598.2	621.0	3.78%
Pharmaceuticals	313.3	328.8	345.0	362.0	379.8	398.5	418.1	438.7	4.93%
Electronics	226.2	235.8	245.9	256.4	267.3	278.7	290.6	303.1	4.27%
Home & Personal Care	171.1	178.0	185.2	192.6	200.4	208.5	216.9	225.6	4.03%
Others	183.5	189.9	196.5	203.3	210.4	217.7	225.3	233.1	3.48%

The **Rest of Europe** segment includes countries such as Austria, Greece, Spain, and Russia. These countries play a significant role in the European economy. Their strong economic growth drives the market growth in these countries. The thermoform packaging market in this region is projected to grow at a CAGR of 3.85%, in terms of value, during the forecast period because of the rise in the food & beverages, healthcare, and cosmetics industries.

The increasing consumption of packed food, improvement in the global economy, and high disposable income are likely to drive the demand for thermoform packaging during the forecast period.

Table 15. Rest of Europe: Thermoform Packaging Market, by Selected Sub-Segments, 2021–2028 (USD Million)

	2021	2022	2023	2024	2025	2026	2027	2028	CAGR (2023–2028)
Type									
Blister Packaging	1,368.0	1,424.8	1,483.9	1,545.4	1,609.5	1,676.3	1,745.8	1,818.2	4.15%
Clamshell Packaging	1,226.5	1,273.0	1,321.3	1,371.4	1,423.4	1,477.3	1,533.3	1,591.5	3.79%
Skin Packaging	1,030.3	1,069.8	1,110.7	1,153.2	1,197.3	1,243.1	1,290.6	1,340.0	3.82%
Other Types	497.0	513.0	529.4	546.4	564.0	582.1	600.8	620.1	3.21%
Material									
Plastic	1,436.4	1,506.8	1,580.4	1,657.4	1,737.9	1,822.1	1,910.1	2,002.1	4.84%
End Use Industry									
Food & Beverage	1,527.7	1,579.3	1,632.6	1,687.6	1,744.3	1,802.8	1,863.1	1,925.4	3.35%
Pharmaceuticals	890.7	933.0	977.4	1,023.8	1,072.5	1,123.5	1,176.9	1,232.9	4.75%
Electronics	642.7	669.2	696.8	725.5	755.4	786.5	818.9	852.7	4.12%
Home & Personal Care	486.3	505.2	524.8	545.2	566.4	588.4	611.3	635.0	3.89%
Others	574.5	593.8	613.8	634.3	655.6	677.6	700.4	723.9	3.36%

2 Sources

MarketsandMarkets Knowledge Store - Multisectoral database that collects market research reports in various technological fields and designed to process some information interactively. More than 1,200 market reports are published each year (https://www.mnmks.com/).

The information presented are contained in the report "*Thermoform Packaging Market – Global Forecast to 2028*", published in March 2024.

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