

Market Share and Trends for Sustainable  
Plastic Packaging for Ice Cream Containers

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### Abstract

This paper explores the market share and trends for ice cream containers that are made out of plastic that can be easily recycled. Research was conducted using online databases and articles to determine what types of plastics are recyclable and how much of the industry they take up. The types of plastics that will be mentioned are high density polyethylene (HDPE #2), polypropylene (PP #5), and polyethylene terephthalate (PET #1). There will be a brief background on the history of packaging, statistics in the industry including which companies use HDPE, PP, or PET for their ice cream containers, how to recycle HDPE, PP, and PET, and some information about wet-strength packaging which is typically used for paperboard ice cream cartons. More research should be conducted as the industry evolves and as changes are seen with packaging and recycling methods.

## Market Share and Trends for Sustainable Plastic Packaging for Ice Cream Containers

Ice cream is a refreshing dessert treat that is enjoyed by many people across the globe. The methods used to package this dairy dessert vary, but this research paper will focus on a relatively new method of packaging — plastic, specifically high-density polyethylene (HDPE #2), polypropylene (PP #5), polyethylene terephthalate (PET #1). As interesting as the methodology of creating the packaging is, this paper will focus on the industry of plastic packaging, such as how much of the broader ice cream packaging industry plastic makes up, annual sales, comparisons between the United States share of plastic packaging and the rest of the world, information regarding the issues of recycling the typical packaging for ice cream products. This paper will hopefully inform the reader about the industry of plastic ice cream packaging and what goes into fueling this industry.

### **History of Plastics**

Plastics have had an interesting history since the first synthetic polymer was created in 1896, according to Science History Institute. At that time, people believed that plastics would “protect the natural world from the destructive forces of human need,” but history shows that they would be poorly mistaken. Leo Baekeland invented the first plastic that was fully synthetic, or devoid of molecules typically found in nature, in 1907. This discovery kicked off a plastic revolution of sorts, with new research programs popping up that aimed to create plastics and figure out a use for them later. World War II helped make plastics readily available to the public, as they were used instead of the limited natural resources available. Some major applications of plastic at this time were parachutes and airplane windows, just to name a couple. At the end of World War II, most Americans viewed plastics in a positive light, but this sentiment would

drastically shift due to oil spills, the Cuyahoga River fire, and the how the connotation of plastic came to symbolize “cheap” as opposed to innovative. The 1970s brought plastic recycling to the forefront of the battle against pollution, but many plastics did not, and still don’t, make it to these recycling plants. Concerns about human health and the impact of plastic on the environment have led to an increased public sentiment against the use of plastics, but the future is beginning to look bright for these synthetic polymers. Modern technology has plastics to thank its rapid advancement, but these plastics may soon become completely biodegradable, made from plants, or go through a more effective recycling process (Science History Institute, 2016). The plastics that will be mentioned are sustainable because they can be recycled, or even reused.

### **Ice Cream Companies that Use Plastic Packaging**

There are many companies that use plastic packaging for ice cream, but a trip to Target revealed how few mainstream ice cream companies use plastic in their packaging, besides the plastic coating of the paperboard in the typical ice cream container. The brands at Target that used plastic packaging were Talenti, Magnum, and Market Pantry’s large gallon containers. Talenti used PET #1, Magnum used PP #5, and Market Pantry used HDPE #2. According to Passport by Euromonitor International, there were 12,433.6 million units of rigid plastic (HDPE) containers created for ice cream, followed by 11,492.3 million thin wall plastic (PP) containers, and finally 131.3 million units of PET #1 Jars for countries all over the world in 2018. The US uses a large portion of PET #1 Jars; 91% to be exact with Western Europe taking the other 9%. When it comes to HDPE #2 jars, the US only uses 4.2%, while Western Europe uses the most at 19.6%. Finally, the US uses 3.5% of PP #5 jars, with Western Europe coming in at 15.7% (*Ice Cream and Frozen Dessert Packaging Pack*, 2018). This data can be compared to the brands seen at Target, as Talenti is one of the most popular ice cream brands in the States and is

coincidentally made with one of the most popular plastics for ice cream containers in the US. The Magnum ice cream brand is relatively new, as their main product is their ice cream bars, and they use the least popular plastic for ice cream containers in the United States. Finally, the Market Pantry ice cream tub is one that is seen for large gatherings and parties, so consumers occasionally use it, leading the percentage used in the United States to make sense. When comparing these statistics to the Retail Value RSP that was compiled by Euromonitor International in 2018, Talenti comes in at 1.5 RSP, while Magnum, which is owned by Unilever, comes in at 12.7 RSP. Market Pantry is a private label owned by Target, so it is thrown in with the other private label companies for a total of 11.2 Retail Value RSP for all private label companies. Going back to Magnum, its parent company (Unilever) is a European Company, so it makes sense that the company used PP #5 for their jars, as it is the most popular plastic in Europe with 1,802 million units, compared to only 1073.4 million units of HDPE #2 containers (*Ice Cream and Frozen Dessert Packaging by Retail*, 2019). To conclude, the three mainstream plastics seen at Target — Talenti, Magnum, and Market Pantry — are made of three plastics (PET #1, PP #5, and HDPE #2, respectively) that can be easily recycled, and the choice of plastic makes sense when compared with the percentage of that plastic type used by country and retail value RSP of each company.

### **Recycling: Plastics versus Wet-Strength Paperboard**

The three main types of ice cream packaging — PET #1, HDPE #2, and PP #5 — can all be recycled, but the process of how they are recycled is interesting. According to The Plastic Man, there are around eighteen thousand businesses in the US that can handle or reclaim post-consumer plastics and send them to a reclaiming facility where they are cleaned, ground into small flakes, melted, filtered, and formed into pellets that are sent to manufacturers to be created

into new plastic products (Plastics and Storage, n.d.). The American Chemistry Council reported that the amount of plastics recycled in the US and Canada in 2016 was 1.4551 billion pounds, and 73% of it was recycled in the United States. Of that 73%, 11% was PET #1, 40% was HDPE #2, and 36% was 11. In fact, those three plastics were the top three plastics that were recovered for recycling. The report also notes that there was an 80% increase in HDPE #2 recycling, along with a notable increase in PP #5 recycling. PET #1 showed a slight decrease which can be attributed to it not being as popular in Canada since they were also included in this report (More Recycling, 2018). Many consumers believe that wet-strength packaging —paperboard ice cream containers — are recyclable. However they are not due to the coating of plastic that keeps the condensation from the ice cream from soaking the paperboard, according to Sarah Kite-Reeves, director of recycling services at the Rhode Island Resource Recovery Corporation. There are ways to recycle these containers, but many cities and municipalities do not have the resources to do so. Consumers mistakenly throw these containers with the other paper products, only to contaminate the pulping process many recycling plants employ to recycle paper. The plastic will not break down in this process, so these containers will create less of an issue by simply being thrown in the trash (Kite-Reeves, 2015). This dilemma creates an increasingly large amount of waste, since some of the top ice cream companies — Dreyer's, Ben & Jerry's, and Blue Bell — use wet-strength packaging for their ice cream containers, as seen at many retail stores, including Target (*Ice Cream and Frozen Dessert Packaging by Retail*, 2019). In fact, some of their containers have a symbol on them telling the consumer that they cannot be recycled. These companies should consider making the switch to plastic, instead of just employing plastic-coated paperboard containers.

### **Conclusions and Future Study**

The sustainable plastic packaging industry for ice cream is small, but the potential to create a positive change for sustainability is enormous. If the top companies for ice cream were to switch to either PET #1, HDPE #2, or PP #5, for their products, more ice cream containers would have the potential to be easily recycled into new ice cream containers or other household goods. More research should be done on the economic limitations and implications of switching from wet-strength paperboard to plastic.

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