American Chemistry Council

Plastics Division

2006 National Post-Consumer Recycled Plastic Bag and Film Report

Introduction

The 2006 National Post-Consumer Recycled Plastic Bag and Film Report is the second annual U.S. report on pounds of plastic bags and film recovered for recycling. Generally in this report we will refer to bags and film as film. Research for this report was conducted by Moore Recycling Associates, Inc. of Sonoma, CA for the Plastics Division of the American Chemistry Council (ACC) of Arlington, VA.

Executive Summary

In order to determine an accurate estimation of pounds of plastic bags and film recovered in 2006, both the domestic and export post-consumer film markets were surveyed. Based on conservative calculations, an estimated 812,010,000 pounds of post-consumer film (including plastic bags) was recovered in 2006. This represents a 24% increase from 652,477,000 pounds in 2005. The information obtained is based on recovery data from 13 reclaimers or end-users and 38 exporters.

The composite lumber industry continues to dominate the market for scrap plastic film. Several plastic bag manufacturers are purchasing scrap film, but at volumes well below the composite lumber companies and export buyers. Strong scrap film pricing indicates strong demand for minimally contaminated material**.** Strong demand is expected to continue. While there is some new capacity slated to come on line in the first half 2008, most of the increase in production this year will stem from higher utilization of existing capacity.

There has been an increase in retail collection programs and that trend is expected to continue with the increase in state and local level mandates for bag collection programs. Significant potential still exists for the increase in recovery of scrap commercial stretch film such as pallet wrap.

In 2006 there was an increase in the number of communities collecting plastic bags via curbside collection. This may result in additional film collected, but given the low quality of most curbside film and the limited capacity in the U.S. to wash highly contaminated material, curbside collected film will likely have very limited marketability. Export buyers are declining it or offering very low prices for curbside film and their ability to continue to purchase it is doubtful as Chinese regulations prohibit the importation of dirty material.

Findings

In 2006, an estimated 812,010,000 pounds of post-consumer film (including plastic bags) was collected for recycling. Of the film collected, domestic reclaimers and end users used, just over 73%.

Post Consumer Recovered Film:

Year	Exported	Consumed in US or Canada
2005	183,701,000	468,776,000
2006	221,082,000	590,928,000

2006 saw a 24% increase in the total pounds of film recovered over 2005. The amount handled by domestic processors increased at a greater rate than the amount purchased by exporters. The reported export increase is a result of both an increase in purchases by exporters, and the identification in 2006 of additional companies that exported film offshore.

The following identification chart is available on www.PlasticBagRecycling.org for consumer and business education:

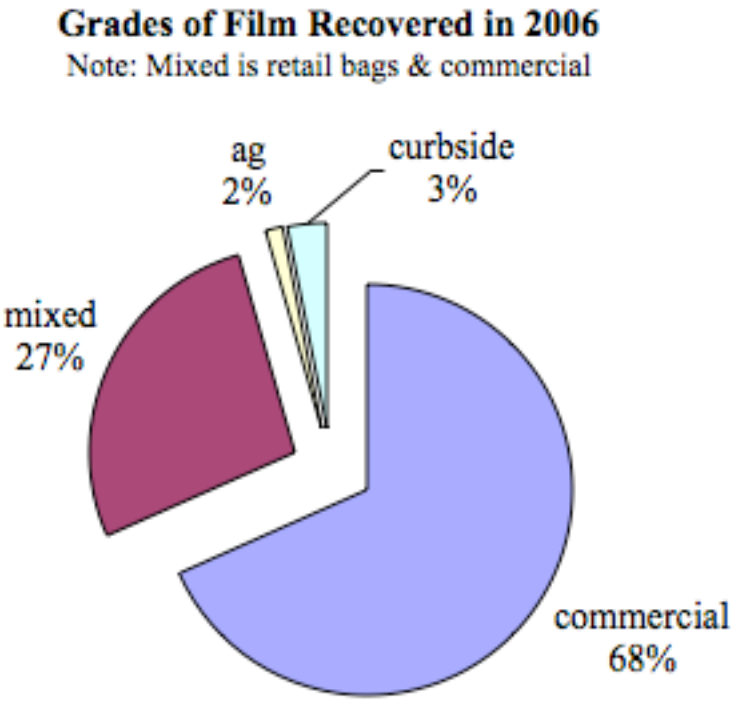
RESIN CODE	CHARACTERISTICS AND EXAMPLES
	**LDPE - Low Density Polyethylene** (unpigmented films have high clarity, moderate stretch & strength characteristics) • **Bags** (e.g., thicker newspaper bags, bread bags) • **Bubble wrap** (may also contain nylon) **Note:** Bubble wrap recycling can be difficult without local markets due to shipping constraints.
	**LLDPE - Linear Low Density Polyethylene** (unpigmented films have moderate clarity, slightly tacky feel to the touch) • **Bags** (e.g. clear, thin newspaper bags) • **Dry cleaning film**
	**MDPE - Medium Density Polyethylene** (unpigmented films have moderate clarity, poor stretch and strength characteristics) • **Consumer paper packaging** (i.e. toilet paper, paper towel) **Note:** MDPE is a variation on the production of LDPE and is often labeled #4. It's generally used as an alternative to other resins in film applications where strength is not required.
	**HDPE - High Density Polyethylene** (unpigmented films have some opacity, crinkle to the touch, low stretch, can tear easily, high strength) • **Most grocery bags** • **T-shirt bags** • **Bags with sealed air for packaging** (e.g., air cushion) **Note:** Release air from air cushions before including with bags.

Consumers are encouraged to recycle the following:

- Grocery bags
- Retail bags (hard plastic and string handles removed)
- Paper towel and toilet paper plastic wrap
- Plastic newspaper bags
- Plastic dry cleaning bags
- All clean, clear plastic bags labeled with a #2 or #4

Grades of Recovered Film

Recovered film enters the market in various grades and typically includes a combination of HDPE, LDPE, and LLDPE.



Commercial Film = Clear, clean PE film including stretch wrap and poly bags

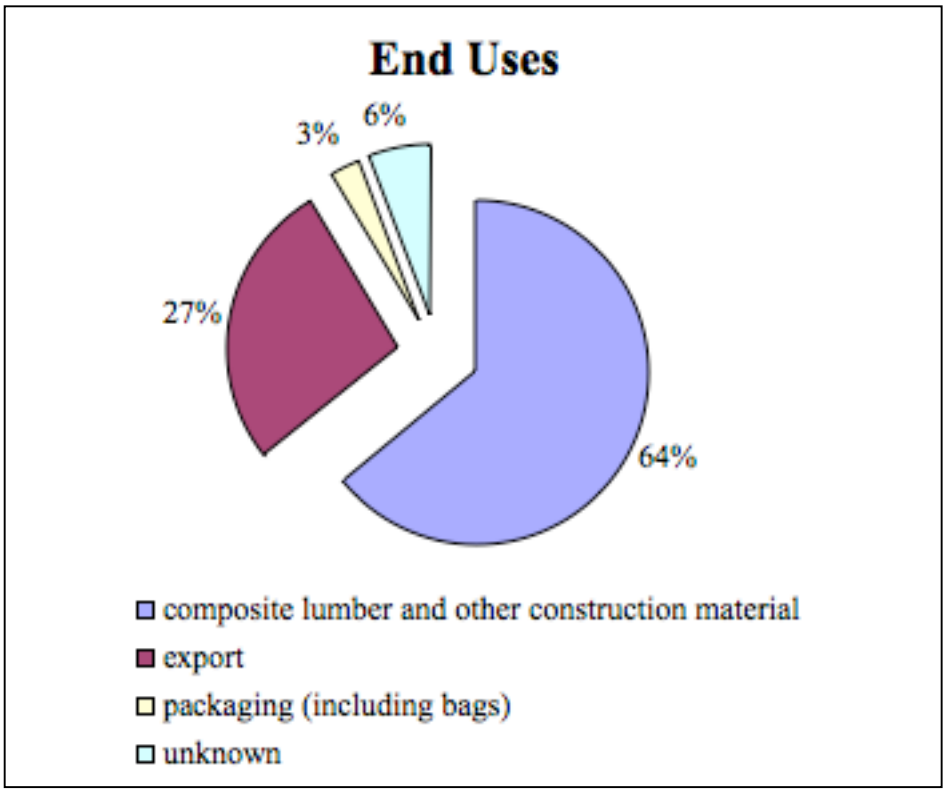
Mixed Film = Mixed color, clean PE film including grocery bags

Curbside Film = Mixed PE film generated at a MRF

Ag Film = PE film from over wintering & greenhouse film, other

Film Marketplace

The market for clean, scrap plastic film was stable in 2006. Prices were slightly lower at the start and end of 2006 but were strong throughout the year for commercial and mixed film grades. Many expected virgin prices to continue to shoot upward and likely cause a stockpile of material. Values for bags and film collected through residential curbside collection were very low most of the year. The value of film collected through curbside programs is usually about 75% less valuable than material collected through retail collection programs. Composite lumber end users dominate post-consumer plastic film purchases from the U.S. and Canada. Two companies (AERT and Trex Company) are the largest composite lumber manufacturers utilizing scrap film, and their production is expected to grow despite the decline in construction and remodeling.



According to Trex's Chief Executive Officer, Andrew U. Ferrari, at the end of 2007, "Trex Company is making very significant progress despite the severe decline in the home building and remodeling markets. In the toughest market in decades, we are very proud of our year-to-date sales. Our sales and market share have increased in all three categories in which we compete: decking, railing and fencing."[1]

AERT is also performing well. AERT partnered with Zhengte in China and was awarded the prestigious *Award for Innovation* at the 2007 International Exhibition on Housing in Beijing, China for their MoistureShield® decking. Demand is on the rise especially with government mandates for environment-friendly products.

In addition to composite decking, more than one-quarter of the film recovered in the U.S. and Canada (particularly from the Western U.S.) is going to Asia. In the long-term strong demand is expected to continue from China for clean, clear scrap film and likely strong demand for clean, mixed bag material. However, the recent Chinese ban on plastic bags may soften that demand as

[1] MSN Money Web Site, Nov 2007

an increase of inexpensive bags from China may flood the U.S. market after the ban goes into effect in June 2008.

Curbside Film

Over the past few years, there has been an increase in curbside collection programs that accept plastic bags. Due to contamination, film and bag materials from these programs primarily are sold into the export market. Reliance solely on the export market to handle curbside or dirtier material is risky as currently there is very little domestic capacity to wash film. AERT will be opening a facility in Watt's, Oklahoma in 2008. It purpose will be to process curbside and agricultural film.

Retail Plastic Bags and Film

There has been an increase in retail sector collection programs in 2007. Even with this increase in material collection, prices remain steady and strong indicating that demand continues to outpace supply. It is expected that the trend will continue as more post-consumer end-use manufacturers realize the opportunity to use scrap polyethylene bags and film as alternative feedstock particularly material from collection programs where the emphasis is on quality and keeping contamination to a minimum.

Given the opportunity to cut waste and costs, an increase in commercial film recovery is probable. More companies are likely to realize the benefit of using existing distribution channels to recover scrap materials, particularly plastic film.

Despite access to U.S. virgin resin sales data it is impossible to determine a recovery rate (the % of recovery) for post-consumer film and/or bags because an acceptable methodology has not been established to determine the volume of material entering or exiting the U.S. as transport packaging or plastic bags. In addition to the imported film products for sale in the U.S., a large amount of material enters as protective packaging of goods from all over the world.

Additional Information

The Plastics Division of the American Chemistry Council provides resources to communities, businesses and consumers to assist them in increasing awareness and education of the recycling of plastic bags and film. Information can be found on the national online web resource **www.plasticbagrecycling.org**.

The 2006 National Post-Consumer Plastic Film and Bag Report has been prepared to provide information to parties interested in the recycling of plastics, in particular film and bag materials. Facilities developing a recycling process and all entities involved in the chain of collection, processing, distribution, and sale of recycled products have an independent obligation to ascertain that their plans, actions, and practices meet all relevant laws and represent sound business practices for their particular operations. Facilities may vary their approach with respect to particular operations, products, or locations based on specific factual circumstances, the practicality and effectiveness of particular actions and economic and technological feasibilities. This report is not designed or intended to define or create legal rights or obligations. ACC does not make any warranty or representation, either express or implied, with respect to the accuracy or completeness of the information contained in this report; nor does ACC assume any liability of any kind whatsoever resulting from the use of or reliance upon any information, conclusion, or options contained herein. This report was produced by the American Chemistry Council.