

Foam Recycling in Greensboro, NC

Launch Phase Report

A Home for Foam

On November 12, 2020, Styrofoam™ recycling (#6 polystyrene foam) launched in Greensboro, NC. Foam recycling starts with a densification machine located at the Tiny House Community Development warehouse located at 1310 W. Gate City Blvd. This project represents a collaborative effort between four non-profit organizations: Emerging Ecology, Environmental Stewardship Greensboro, Greensboro Beautiful and Tiny House Community Development (THCD).



Tiny House Community Development warehouse



Foam drop-off bins, signage, and the first ingot.

Residents and institutions with foam can use the two drop-off bins conveniently located behind the THCD facility. Street signs indicate where to turn off W. Gate City Blvd. using the marked driveway between the two buildings. This center accepts both clean food service containers – cups, egg cartons, and take-out boxes – as well as packaging materials used for coolers and shipping fragile products.

Material placed in the bins are densified into ingots, which can be manufactured into a variety of materials. The drop-off location is open 24/7 and are monitored and emptied regularly by the THCD staff and volunteers.

The foam (1) densification process produces ingots that are in a variety of useful products. Foam material is crushed, heated, extruded, and formed into ingots (2). Manufacturers grind the ingots into small pieces and mix them with specific additives. This mixture is heated again and extruded into materials that create for picture frames, molding, and other building materials (3).

The densification process in Greensboro uses a RecycleTech XT200E machine to pulverize, heat, and extrude raw material delivered to the drop-off location.



From foam to frame

The Process

1. Verify that the material is clean and free from tape and labels.
2. Feed the material into the densifier. The foam is ground up, heated, and extruded.
3. Shape the extruded material into manageable brick-like ingots.

The ingots are then stacked on shipping pallets for shipping to manufacturers who will start the material on its next journey of usefulness.



The Process



Step 2: Grinding

Disposal Dilemmas

Foam plays many important roles in the food service industry, it keeps other materials at specific temperatures, and it prevents damage during shipping. However, used foam materials have long been problematic for recycling efforts.

In Greensboro's a single stream [recycling program](#), the material is unacceptable. Foam is also very light and the City pays for waste disposal by the ton, so it's not *inherently* expensive for municipalities to dispose of. However, foam takes up considerable space in the landfills and deteriorates very slowly. Landfill regulations determine how big one can be, not how heavy. Thus, the size of foam products result in less landfill life. Decreasing landfill space is concerning because North Carolina only has room to landfill waste for approximately 40 more years at currently permitted facilities – and residents of any municipality will often fiercely fight the construction of new landfills near them.



Step 3: Guiding the extruded material into a brick-like shape

Even More Environmental Benefits

Since foam begins as a petrochemical product, reducing the amount of fuel-based products created is another added benefit. Lastly, since foam is 95% air, shipping it to distant facilities requires time, energy and fuel which make the transportation process unfeasible. These factors heighten the urgency to create localized densification of polystyrene foam. A pallet of expanded foam products weighs the same as the ingot of densified material you see next to it. This photo provides a clear example of the effectiveness of the densification process as a way to divert foam from landfills.

The Foam Puzzle

The process for densifying foam works in a simple and there's a clear benefit to removing foam from the waste stream. Nonetheless, the task of fitting together the various pieces in Greensboro has involved many players over several years.

In 2007, several faith-based congregations, inspired by the eco-theologian [Thomas Berry](#), a Greensboro native, began to meet together to determine ways they could embody responsible ecological stewardship. They organized themselves into a group called Environmental Stewardship Greensboro (ESG) and began collecting foam from members of their congregations. In 2011, the team was proud to have a car full of material to take to a processing facility in Randleman, NC, approximately 25 miles from the heart of Greensboro.

A Roadmap to Recycling

As the years passed and the congregations began collecting greater volumes of foam, ESG began looking for partners to establish a permanent recycling system in Greensboro. ESG identified several factors required to recycle foam locally:

1. A location and volunteers to collect clean, raw material from residents and local institutions
2. A densifier to create ingots that are more valuable than expanded foam
3. Staff to process the material
4. Fundraising expertise and tax-exempt status for donations to expedite the initial financing

ESG also recognized the substantial capital required to launch the project and that these initial costs were unlikely to be recovered from the sale of the densified ingots for a reasonable return on investment.



One ingot vs. a pallet of foam of the same weight



The original foam load, 2011

Better Together

Eventually, Greensboro Beautiful, Inc., Emerging Ecology, Environmental Stewardship Greensboro, and Tiny House Community Development agreed to work together to bring foam recycling to the community. The energetic staff of the City of Greensboro Field Operations Department, who have extensive contacts throughout the recycling industry, supported these four non-profit organizations by providing introductions, guidance and assistance with marketing materials and signage.

A grant from the Foodservice Packaging Institute's Foam Recycling Coalition combined with a large gift from Greensboro Beautiful enabled the project to fund the purchase of equipment and materials. In addition to the two grants, donations from 27 individuals and 6 congregations provided the capital to launch the project.



Launch of Greensboro's foam recycling project, November 2020.

Amid the Covid-19 restrictions of 2020, the Greensboro Foam Recycling Project launched in the warehouse facility of THCD. Volunteers are being organized to sort the material into food service products and industrial packaging materials and will also assist the THCD staff when operating the densifier and handling the ingots.

Background information about the project, ways to provide additional donations, as well as practical ways for getting personally involved in the project are available at www.EmergingEcology.org/NoFoam.

Representatives from its founding partners manage the Greensboro Foam Recycling Project.



Emerging Ecology



*Environmental
Stewardship Greensboro*



Greensboro Beautiful, Inc.



*Tiny House Community
Development*