

Corn to Plastic

Plastics manufactured from plant based materials are gaining in popularity as more people seek alternatives to traditional plastics made from petroleum or natural gas. There are many types of plant-based products currently available including packing peanuts made from potato starch and single use food storage items made from [sugarcane](#). Perhaps one of the most common plant-derived products many of us have seen lately is "corn plastic". In this Friday Facts, we will take a closer look at how corn is transformed into "corn plastic".



Corn is one plant with sufficient starch content for use in alternate plastics manufacturing. According to this 2006 [article](#) (from the *"Smithsonian Magazine"*, other plants that could be used for the production of plant based plastic include wheat, beets and potatoes. As you will see below, starch is a critical component in the process. Note: the source for the following information is [NatureWorks®](#), a company with a proprietary process for manufacturing plastic from corn. If you are interested in a poster sized presentation of this information, follow the NatureWorks® link and look for the pdf file entitled "[corn to plastics](#)".

Here is a summary of the step by step process:

1. The harvested corn is sent to the milling plant.
2. The milling plant cooks the corn for 30 to 40 hours causing the corn to swell and soften.
3. The corn is ground and screened by machines that isolate the starch.
4. The starch is then converted to sugar.
5. The sugar is fermented with microorganisms converting the sugar into lactic acid.
6. The lactic acid molecules link together into rings called *lactide monomer*.
7. These rings ultimately link together to form the *polylactide polymer (PLA)*.
8. Once formed into pellets, the PLA is branded by NatureWorks® and distributed.

Currently, one of the most visible uses of PLA is new packaging of SunChips® snack food. According to the information on the SunChips® bag, this packaging will break down into compost either in an active home setting or in an industrial compost environment. For more information from FritoLay® on composting these snack bags, visit the [SunChips®](#) website.

Other corn-based compostable plastics we may have seen recently include the beverage cups pictured below. Unlike the SunChips® packaging, these types of plastics will generally compost more efficiently at an industrial composting facility. If you have questions about composting facilities in Kansas, please contact the Bureau of Waste Management at 785-296-1600 or 1-800-282-9790.



Plant based plastics will undoubtedly continue to increase our choices as consumers. In general, doing some research on a product is always a good idea before making a purchasing decision. If you have questions about recycling options for alternate plastics, check with your local recycling center or visit kansasrecycles.org.

