



Organic bags of corn starch.

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Summary: Bags made from cornstarch, unlike conventional plastic bags, serve as compost, since being made of a biodegradable material they can be disposed of directly on Earth and in the course of 180 days the waste will degrade. It is proven that over the years, with the use of ecological alternatives such as starch, the plastic of everyday products will disappear, as we have already seen with bags.

Research Question: How to make organic bags from the use of corn starch?

Objective: To make biodegradable bags using corn starch.

Justification: The corn bag offers us a version of material that is accessible and has certain qualities, among them it is that this raw material can be obtained with relative ease. In addition, these ecological bags are 100% biodegradable, they disintegrate in about 180 days, with the same characteristics and mechanical resistance as ordinary plastic bags. Corn starch bioplastics can be removed and degraded directly by the environment. The recovered fertilizer allows to fight against erosion and favors the overall good functioning of agricultural land.

Hypothesis: If we can make eco-friendly bags using corn starch, then we would get an alternative to the use of plastic.

Problem statement: Plastic waste is the main cause of pollution in the world, in particular plastic bags. In Mexico, thousands of tons of plastic bags are discarded every day, which are not biodegradable and pollute the land and the sea. Some of the alternatives sought are recycling, however their cost is 100 times higher so it is not a viable option. It should be noted that with the establishment of a new law prohibiting the use of plastic bags in the CDMX, the capitals look for viable and economical options.

METODOLOGY



Fig. 1 Materials.



Fig. 2 Mix the ingredients (previously measured) in the pot.



Fig. 3 Spread on aluminum plates.

Results: Fifteen plates of the polymer made were obtained, of which 5 were discarded since they did not meet the total standards. With the remaining 10 plates, an approximate weight of 200 grams was recorded, which had an estimated thickness of 3 mm, a strong smell of vinegar, with a smooth texture and a light yellow color. The approximate cost was 70 pesos.

Conclusions: Biodegradable plastics are of great importance to today's world, as it effectively improves environmental pollution conditions, due to their great biodegradability in a short term, although on the other hand the manufacture of such plastics is relatively long and late but with organic materials and residues that are easy to achieve at a low cost, such as vinegar and glycerin, it was observed that they had good properties such as flexibility and resistance.

Discussion: Biodegradable plastics are of great importance for today's world, since they reduce the conditions of environmental contamination due to their great biodegradability in the short term, one of the disadvantages of making such plastics is that it is relatively long and time consuming, but with Organic materials and waste that are readily available can be produced at low cost. Analyzing each of the characteristics of conventional plastics with those of biodegradable plastics, we discovered that both plastics are flexible, hard, moldable, waterproof, resistant and biodegradable. By carrying out this research project, society can be exhorted to reduce the use of conventional plastics. After having obtained the experimental results, it can be said that our objectives were met, since it was possible to identify the most efficient organic residue for the elaboration of a biodegradable plastic, which were vinegar and glycerin, since it was observed that They had good properties, such as flexibility and resistance.

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