Alternatives For The Use Of Recycled Pet

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Abstract

at present the consumption of biodegradable and non-biodegradable products has become in a very market wide to exploit. sayings products they come packed or in presentations especially cardboard, paper and PET, after being used they become in waste or waste that requires to be reused, these are stored and baled. This document consists of a revision on the polymer material Polyethylene terephthalate (PET), impacts environmental and new alternatives for your use prolonged unaffected. This document can be taken as the basis for the study of alternatives defined, to mitigate the impact it has the pet in the environment.

Keywords: Students, income, use of money.

Introduction

one of the greater contaminants is the use of plastic, which is used in Many processes and activities on a daily basis; especially the food industry prefers preserve and store sayings materials. This material is called PET (Polyethylene Terephthalate) and has large advantage besides being cheap to manufacture [1].

since the turn of the century past, all parts they have worked up hard to reach a consensus on the need to create a development model friendly to the environment. The best option is to reduce, that is, to change processes, operations, and consumption patterns to produce less waste. A is option follows reuse in landfills, the recycling, recovery energetic, the treatment and removal, see Figure 1. [3]. conscience environmental leads to configurations systems techniques and production processes efficient in harmony with the environment, which necessarily derives from the idea of recycling [4]. Searching alternatives technology for the social commitment, the recycling becomes in a opportunity to change the perception of MSW [5].

The increase in production brings effects positive, like the development of technology and industry, but at its time creates a wide range of problems for planet, since the lack of conscience, the misuse of energy and the resources and waste overproduction is it so
associated with high costs environmental conditions. Due to the high requirements for the packaging of the products, the demand for PET is increasing gradually, and when the product is consumed, it will have an effect adverse in the environment because your packaging is used incorrectly. It is well known that "of the 12 million tons consumed in the world, only recycled 20%". [6][7]

Method

Guevara et al., (2020) Conceptualize the method of determining the descriptive features to be able to analyze the object of study, in this case all the evaluations are based on the respective conclusions or the way in which they interact in the analyzed elements.

After defining the variables and research methods, the existing literature on environmental management systems, polymers, their classes, their production methods, the different applications and the main indicators of current contamination in modern production cycles is reviewed.

Learning is the foundation. Reviewed databases such as Scielo, SCOPUS, Science Direct and national and international universities, as well as various reports, news and communiqués prepared by various national and international environmental control agencies. Furthermore, the analytical tools used in this article are structured to create a reference matrix that allows comparison of expert ratings of different topics while characterizing them using graphical and descriptive statistical tools. Changes and interactions of detailed variables under different conditions.

Analysis of research information

PET. The polyethylene terephthalate, plus acquaintance like pet, it was developed by JR Winfield and JT Dickinson, 1941. The production commercial polyester fibers started in 1955 and, since then, the product has experienced growth phenomenal as they have been gone discovering its multiple uses. Since 1976, it has been used for the production of packaging, mainly for beverages. It is also used for packaging products chemicals agricultural, detergents liquids and products pharmacists. [8]

1 or PETE (polyethylene terephthalate). These are soda bottles, water, mayonnaise jars, rinse buccal, oil, vinegar and more. It is usually disposable and transparent. is highly recyclable and can be use to make woolen coats, blankets, furniture, bags, building panels and others packing forms. PET 2 or HDPE (high-quality polyethylene density). lies principally in milk, juices, detergents, bleach, shampoo containers and containers, some trash bags, cereal bags, car trunks, and yogurt cups. They are also highly recyclable. they converted bottles rustic What Detergent in pens

Dumpsters, gutters, doghouses, construction materials. PET 3 (vinyl). is used What container for some cleaning products, packaging transparent for food, equipment doctors,
windows and PVC pipes. It is rarely recycled. [17]

One kilogram of PET is compound 64% oil, 23% liquefied natural gas derivatives and 13% air. 3P-xylene derived from crude oil can be oxidized with air to produce acid terephthalic for another side, the ethylene obtained from natural gas is oxidized with air to obtain ethylene glycol. PET is formed by combining acid terephthalic acid and ethylene glycol;[4] In addition, it establishes that the polyethylene terephthalate (PET for short) is a polyester crowded. Commonly used in the production of single-use plastic bottles. Currently, the residues of these bottles are a problem environmental due to its great accumulation, and although it is not a substance dangerous, it is very resistant to degradation.

**PET Characteristic**

**Biorientation.** This allows achieve properties mechanical and barrier by optimizing the thickness.

**Crystallization.** It allows use heat resistant in trays thermoformed in blast furnaces for cooking, microwaveable__

**sterilizable.** By gamma and ethylene oxide.

**Alternatives ecological**

- returnability
- fibers
- Polyols for polyurethanes
- Incineration [10]

Furthermore [7] adds what:

- has high crystallinity.
- It is recyclable
- Protects from CO2 and humidity.
- Resists corrosion and __ wear.
- you can use What product packaging __ food
- good resistance chemical and thermal

**Uses of recycled PET.** The Recycling is the transformation of waste through various processes, giving them back its economic value and avoiding. So his final disposition, as long as it is regeneration benefit the saving energy and materials premiums, without harming health, the ecosystem or its elements [2]. The advantage of the PET plastic bottle is that it is an element Already processed that finds his condition optimal for your use repeated. Also, your property plus important is ductility, which is capable of withstanding tension and elasticity before failure. [eleven]. Having in count the properties mechanics of the PET containers, the possibility of
reuse direct after the treatment is excellent, since they are not required processes complex nor high power consumption, and the waste recycling solids is good for the environment. [12]

Recycled PET comes from mainly bottles and containers. The recyclability of this product has been achieved through the development of a simple and profitable production process based in compound preparation methods traditional, which allows get compounds plastics technical suitable for applications demanding What auto parts, where the properties strength, temperature resistance and dimensional stability are important. essential [10]

that they are born new products, first you have to pick up the containers used. Today, most cities European and American have recycling collection programs [1]. Enter the adults in the city of Medellín, as concerns grow environmental conditions, people are less likely to recycle in compared to those who do not. Similarly, the probability of recycling in the group with higher awareness environmental was very close to group less worried for the environment. In East sense, the gap is identified cognitive between attitudes and habits in topics environmental, especially regarding the processing and consumption of beverages packaged in PET containers. [18]

PET is used to produce geosynthetics, which are melted, filtered, and extruded to produce polyester fibers with smooth, good appearance tensile strength and low water absorption, which are used in nonwoven geotextiles and geogrids reinforced. The recycled PET in various forms is used as an improved material for concrete and asphalt [12]. PET containers are a alternative potential for your use as an alternative, lightweight and leveling material for construction light in large areas. [12] The main concern of recycling is the reuse of these packaging, assuming that the recycled PET bottles are distributed normally and are used for non-food applications What solvents, detergents, motor oils, etc. for storage. [13]. In a trend recent, composite panel reinforced with wheat straw and post-consumer PET has become in a consumer alternative to wood in the home and furniture construction industry. So What a alternative to the use of wheat straw for farmers and PET, and another option to reduce tree felling by using both waste materials to produce wood plastic. the compound resultant does not have pores and can be: drilled, sanded, polished, cut by hand or with a chainsaw, extruded, transferred. Since straw and PET are not completely miscible, in the mixture two phases remain, whose size It will depend on the concentration and the particle size, which translates into changes in the impact resistance and hardness of the material. [14]

The processability and moldability of PET straw blends are believed to improve greatly with the addition of HDPP or PE, so the project proposes the use of recycled PET straw mixes. Wheat with polypropylene or high-quality polyethylene density. the results obtained allow the creation of mixing and molding processes for larger-scale production, providing a real opportunity to avoid burning straw and reduce pollution from PET bottles. the wood plastic resulting can be use to make furniture, scaffolding, lath and bricks compounds for a building fast. [14]
brick making through the PET recycling is a new trend in the development of the recycling of this material; Initially, PET bottles were collected and classified. The material is then fed into a mill to produce a final product in the form of flakes. The wooden shapes are made in the dimensions already determined for the manufacturer, viz., 23X10X4 (cm); are shapes is so designed for wall coverings carriers. After preparing the mold and crushed PET, we begin to mix the materials: gray cement, in part water, in the proportions indicated in Table I [15].

The authors conclude that PET flakes have proved to be a material with properties desirable in the construction sector; is owed conduct the research necessary to support the above theory and allow the PET recycling is integrated in others industry areas. [fifteen]

Replace the concrete aggregates traditional with crushed polyethylene terephthalate (PET) provides several benefits and advantages environmental and construction, such as:

- Plastic is more easier to process, fill and mix than stone traditional and therefore requires less manpower.

Table 1. Percentage of mixtures with its respective identification for show

<table>
<thead>
<tr>
<th>Cement (% in proportion in weigh)</th>
<th>pets (% in proportion in weigh)</th>
<th>Show</th>
<th>Do not give samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td>10</td>
<td>M1</td>
<td>5</td>
</tr>
<tr>
<td>80</td>
<td>twenty</td>
<td>m2</td>
<td>5</td>
</tr>
<tr>
<td>70</td>
<td>30</td>
<td>M3</td>
<td>5</td>
</tr>
<tr>
<td>60</td>
<td>40</td>
<td>M4</td>
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<td>50</td>
<td>50</td>
<td>M5</td>
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<tr>
<td>40</td>
<td>60</td>
<td>M6</td>
<td>5</td>
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<td>30</td>
<td>70</td>
<td>M7</td>
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<td>20</td>
<td>80</td>
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<td>5</td>
</tr>
<tr>
<td>10</td>
<td>90</td>
<td>M9</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: [15]

- Plastic is more easier to process, fill and mix than stone traditional and therefore requires less manpower.
● The recycling of PET plastic expands the use of materials that would otherwise be discarded, incinerated or deposited in landfills without any post-treatment, helping to reduce and recycle the waste. [6]

Furthermore, [6], like the previous author, adds that it is possible to get blocks with better properties since the economic, weight, and functional point of view.

● The PET plastic recycling process is extremely simple and economical, since it is not necessary to wash, separate, or classify the material, and it is not necessary to remove the labels nor the caps.

● The processing of these materials plastics does not leave waste in gross, since you can even add crushing and cementing redundant to the new mix [6]

The construction of the bottles can be compare with the use of bricks, it is basically the same system but with materials changed. The bottles act as "eco-bricks" and can be made of PET plastic (polyethylene terephthalate) or glass; East latest can provide different glow and color effects on non-structural walls. Interestingly, the structures resulting, in addition to recycling waste, they are very durable, light and provide the conditions thermal enough to provide housing for low-income families or communities resources. PET plastic has endurance structural, heat resistance and insulation acoustic, so it was decided to use this stuff. [8]

The process is simple, at first you need put together all bottles of the same size, preferably Coca-Cola of 1.5L or 3L, all have a surface smooth. Then move on to bottling. For this part, pour the chosen material in the bottle, either dirt, sand, gravel fine or one plastic bag.
The bottles are placed on concrete beams armed until reaching the first floor. The bottles must be placed perpendicular to the walls and alternating between them with the top and bottom sides in different directions. The second row of bottles is placed in the space for the first row of bottles. When placing the bottles, tie them around the waist of the bottles with a rope or twine. After that, we continue tying the bottle caps, forming something like this: a napkin.

PET is also used in cement mixes, where it is used to improve properties. For your crafting are used various materials: plastics, shredded in a mill designed for that purpose and then mixed with cement and products chemicals. The additives in the water improve particle adhesion to cement. The slow biodegradability of plastics is a problem in many cases; in East case, it becomes a great ally for this material. PET granules are mixed with cement in a concrete mixer and then added water with additives chemicals. When the mix have a consistency homogeneous, poured in molds metallic and compact.

Obtaining polyester unsaturated from residues is also a reality. Depolymerization of PET and ethylene glycol in the conditions indicated produces mainly monomeric bis(2-hydroxyethylene) terephthalate (BHET), measured for its melting point and H-NMR spectrum. The reactions between anhydride maleic and ethylene glycol and between BHET, AM and EG produce polyester resins unsaturated. Both reactions were controlled through quantification of the acid value and H-NMR spectroscopy. In this way, an example of the usefulness and potential

Figure 3 Portico structural [8]
of the treatment is demonstrated. Waste chemist to obtain compounds _ _ organic useful. [9]

conclusions

the alternatives raised in East work, they are trending world at the time of today, it is observed that the topics of greatest interest is it so within the construction sector, having So aggregates for concrete, aggregates for the creation of bricks, use of bottles for the construction of walls (case school) and the interest for depolymerize, but, this last is more expensive though _ _ his impact environmental is more blunt.

the alternative plus accurate to mitigate almost for _ _ the pollution they generate _ _ the plastics is non-manufacturing, this raises the developing sustainable, though East is away, thanks to the great demand worldwide of this material, since in its great part is used for the food industry, automobile industry, etc.

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