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# Use of Plastic Bottle as Bricks

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**Abstract:** One of the main disadvantages in constructing house is high cost of the building. High cost of primary requirements for constructing the houses in places on where people are under poverty line, is forming one of the most significant problems of people. On the other hand , urbanization growth will increase rubbish especially non-renewable ones. Rubbish as required materials for building constructions and also providing comfortable situation and suitable thermal for building residents. Plastic bottle is considered as a urban junk with sustainability characteristic which can be used as a material instead of some conventional material such as brick in building in construction. This paper intends to investigate the application of plastic bottles as one of the urban wastage in buildings construction and that how it can lead to sustainable development. At the end , it concluded that in different factors such as time of execution, cost, load capacity, flexibility reducing waste and energy efficiency, plastic bottle can be more effective compared to some conventional building materials such as brick, concrete and ceramic block.

**Keywords:** Plastic bottle, sustainable material, sustainable development, urban wastage, construction.

## I. INTRODUCTION

Bottle bricks are a simple and accessible Technology that can transform Everyday plastic material into a useful building material- plastic bottles stuffed full of trash until they are as compact as bricks. Bottles bricks are known widely as “Ecobricks” or “Ecoladrillos” in Spanish and have also been called “Portable landfill devices”. Nowadays, large amount of plastic bottles are wasted and disposed everyday. People Are thrown away them without considering that what those plastic bottles can have impact on humans and/or environment. Plastic bottles bricks an inventive solution to junk, established the innovation of building plastic bottle bricks**.**

When you make clay brick, the time and energy use right from mixing the clay to baking it in the kiln and taking into account the fire wood used for that, you will see that the bottle brick is far more energy-efficient. The technology also reduces the carbon emission that happens during the baking of an ordinary brick. The heat generation from cement factories can also be reduced as this technology uses only five % cement. PET Bottle can last as long as 300 years (Undoubtedly longer than the cement used to bind the bottles together in the walls!) This instructable tells you how to build a structure with these bottles.

## II. MATERIALS AND METHODOLOGY

- Plastic waste preparation: - The main objective of these research work is to develop and efficient way to utilized the waste of the plastic bottle which is a great threat for the sustainment of ecological balance. The plastic bottles waste was collected from various places. The regitated bottle
- Bottles, Bottles Everywhere!

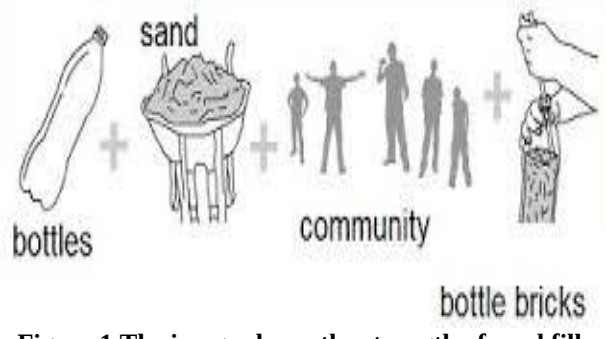


**Figure 1 The image shows the strength of mud fill plastic bottle.**


1. Your first step is to collect as many discarded plastic bottles as you can. They can be of various capacities.
2. Next step is find a placed where you can get a hell load of dry sand (Finer, the better)
3. Next process is to take the bottles, fill them with sand, sealed and then paste them with a mixture made of earth, clay, sawdust and a little cement to provide additional strength and durability.
4. Now you are all set. Always start with the pillar.
5. Dig a cylindrical pit about 60cm in depth. The radius should be at least 10cm more than the length of the

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bottle that you are going to used for constructing the pillar.

6. Make a cement bed (about 4cm thickness) in the pit. Insert a long iron/steel rod at the centre. Tie a long and strong thread to the rod. Now we are going to lay 10 or 11 bottles around this rod. For this, first lay a bottle on the bed such that bottle is radially oriented towards the centre. (i.e., the cap is oriented towards the rod ).
7. Take the thread and make a knot around the neck of the bottle you just laid. Put the next bottle in similar way keeping in mind that the caps of the two bottles touch each other. Make a knot around the 2nd bottle also. Repeat the steps until you lay all the 11bottles. You have made your 1st course of bottles.
8. Fill the gaps between the bottles with rubble and cement. Make the next bed and continue this process till you fill the entire pit. Your foundation is complete. Leave it for a few hours so that the cement will solidify.
9. After you have made the foundation for all your pillars, you can start building the pillar. Lay the bottles like you did for the foundation, and you will see your pillars rising. You can put broken bricks or other construction wastes between the bottles so that they don't move.
10. Now if you want you can plaster your pillar with cement.

This pillar is many times stronger much cheaper than an ordinary pillar made with bricks.

After building all the pillars, you are ready to make the platform.

a. Make an out line of your platform with chalk powder or any color powders.
b. Make a clay bed about 5cm height and width=5cm > length of the bottles. This bed runs along the perimeter of the platform.
c. Now lay the bottles (With their neck facing outwards) one by one on this bed.

d. After laying a course, fill the inside area with cement, clay or rubble. If you want to make more courses, make sure that you knot each bottle of the underlying course with the above course as shown in picture. This is to impart more strength to the structure.

e. This is your platform. Now put tiles or ceramics for flooring.

f. You can put any type of roof over this because the pillars are really strong enough to hold them.

g. Create your own deigns ,and build your own structure with this cheap construction method!

HAPPY BUILDING!!

## III. ADVANTAGES

- Low cost.
- Non-Brittle (unlike bricks).
- Absorbs Abrupt Shock Loads.
- Bio Climatic.
- Re-usable.
- Less Construction Material.
- Easy To Build.
- Green Construction.
- Damp Proof.

## IV.CONCLUSION

Plastic bottles are considered as a kind of indecomposable junk which can have substantial dangerous impact on environment. On the other hand using the non-renewable resource cannot lead to sustainable development and causes to the resource depletion which can bring a destructive concern for the future generation. It has been demonstrated that the plastic bottle can be used in some parts of building construction such as walls, roof and etc. Reusing the plastic bottles as the building material can have substantial effects on saving the building embodied energy by using them instead of bricks in walls and reducing the carbon dioxide emission in manufacturing the cement by reducing the percentage of cement used. it is counted as one of the foundation's green project and has caught the attention of the architecture and construction industry. Generally the bottle houses are bioclimatic in design, which means that when it is called outside is warm inside and vice versa

**Result**

1. By use of this method, we can solve the problem of plastic bottle as well as fly-ash.
2. It will reduced consumption of soil used to manufacture natural bricks
3. It is very economical while designing any type of structure.

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