

INCORPORACIÓN DEL PET COMO REEMPLAZO PARCIAL DEL AGREGADO FINO EN LA MEZCLA DE CONCRETO

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RESUMEN

El proyecto propuesto tiene como objetivo abordar el problema ambiental causado por la producción y el descarte masivo de PET (tereftalato de polietileno), un material ampliamente utilizado en la fabricación de envases para alimentos y bebidas. La disposición indiscriminada de PET contamina el suelo, el agua y el aire, generando impactos negativos a nivel global. En Colombia, se utiliza una gran cantidad de PET, y la mayoría termina en vertederos, afectando ciudades, mares y ríos.

La propuesta consiste en utilizar el PET como componente en mezclas de concreto, lo que permitirá su utilización efectiva en proyectos de construcción. Las mezclas de concreto son procesos estructurales fundamentales en la planificación de proyectos de construcción. La iniciativa principal es sustituir aditivos finos en un 0 %, 5 % y 15 % de las mezclas de concreto por residuos de PET triturados. Esto no solo contribuye a reducir los costos de construcción, sino que también mejora las propiedades del concreto y ayuda a mitigar la contaminación asociada al uso del PET.

El proceso propuesto implica recolectar la cantidad necesaria de residuos de PET de lugares como vertederos, tiendas y supermercados. Estos residuos se lavan para eliminar impurezas que podrían alterar las propiedades fisicoquímicas de la mezcla de concreto. Una vez limpio, el material se tritura hasta obtener un tamaño similar al del agregado fino (arena) y luego se incorpora a la mezcla de concreto, aprovechando sus propiedades beneficiosas para el proceso de construcción.

Palabras clave: PET, Contaminación del suelo, agua, vertederos, construcción, concreto.

ABSTRACT

The proposed project aims to address the environmental issue caused by the massive production and disposal of PET (polyethylene terephthalate), a widely used material in the production of packaging for food and beverages. The indiscriminate disposal of PET contaminates the soil, water, and air, generating negative impacts globally. In Colombia, a significant amount of PET is used, and most of it ends up in landfills, affecting cities, oceans, and rivers.

The proposal involves using PET as a component in concrete mixes, allowing for its effective utilization in construction projects. Concrete mixes are fundamental structural processes in construction project planning. The main initiative is to substitute fine additives in 0 %, 5 %, and 10 % of concrete mixes with crushed PET waste. This not only helps reduce construction costs but also enhances concrete properties and assists in mitigating pollution associated with PET usage.

The proposed process involves collecting the necessary amount of PET waste from places like landfills, stores, and supermarkets. These waste materials are washed to remove impurities that could alter the physicochemical properties of the concrete mix. Once cleaned, the material is crushed to a size similar to that of fine aggregate (sand) and then incorporated into the concrete mix, harnessing its beneficial properties for the construction process..

KeyWords: : PET: Polyethylene Terephthalate, Soil Contamination, Water Contamination, Landfills, Construction.

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