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Recycling used face masks as building materials, the first step towards sustainability.

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In the COVID 19 pandemic, it has been observed that the production and use of disposable face masks is increasing rapidly. If you do not dispose of your used face mask, the environment is endangered by new forms of non-biodegradable plastic waste that can take hundreds of years to decompose. Therefore, there is an urgent need for environmentally friendly and witty recycling of such waste. This study shows an efficient solution by using crushed or crushed form of waste masks to produce environmentally friendly and affordable green concrete. This study evaluated the mechanical properties and durability of concrete incorporated into waste masks. A total of six compounds were prepared for standardized tests to determine compressive strength, split cylinder tensile strength, rapid chloride penetration test (RCPT), and freeze-thaw resistance. The percentage of mask fibres used was 0.5, 1, 1.5, 2% by volume of concrete, but only 0.5% of the crushed mask was used. Both forms of mask waste have been found to be suitable for use in concrete [1]. It was found that 1% of the waste mask fibre is optimal for increasing compressive and tensile strength, reducing chloride permeability and increasing freeze-thaw resistance. In addition, 0.5% chopped mask fibre is also particularly suitable for the production of low permeability and highly resistant concrete. Thus, waste masks that increase pollution around the world have been confirmed to be sustainable for the construction of more environmentally friendly buildings.

By reusing waste masks to produce improved concrete with excellent strength and durability, roundness and sustainability are achieved along with efficient waste management. The COVID19 pandemic has dramatically increased consumption of personal protective equipment (PPE), including face masks, worldwide. The increasing use of COVID19 sanitary masks has created new environmental challenges by adding large amounts of plastic particulate waste to the environment. Approximately 6.6 billion masks of 2640.79 tons are used daily. Disposable face masks are made of polypropylene non-woven fabric. Two different fabrics (ie spun bonded polypropylene and melt blow polypropylene) are used as raw materials for surgical and non-surgical face masks. Similarly, polyethylene, polyurethane, polyacrylonitrile, polyester and cotton fibres are also used as raw materials. Garbage masks make waterways, freshwater, and marine environments inferior and add plastic to water media. They are commonly found on streets and beaches due to ignorance and mismanagement. Several countries and the World Health Organization (WHO) have issued regulations and guidelines on PPE waste management and disposal of plastic waste, including face masks. Face masks are a direct source of micro plastics and pollutants in the environment [2].

The decomposition of face masks into micro plastic waste and Nano plastic waste due to various environmental factors (temperature, humidity, salt content, etc.) deteriorates the health of living organisms and worsens the environmental conditions. A single disposable mask emits approximately 1.5 million micro plastic particles upon weathering. Similarly, improper disposal of face masks can spread the disease and have a negative impact on the environment. Adsorption of organic and inorganic nutrients in plastic waste, especially in water, can provide an environment that supports the further spread of pathogenic species such as bacteria and pollutants. Unlike biomedical waste, waste masks were mainly disposed of in a mixed process and were not treated as biomedical waste. Collecting and dumping infectious waste in developing countries is a serious health hazard. Incinerating plastic produces toxic gases (dioxin and furan), so we do not strongly recommend incinerating waste masks. Careful disposal of old masks and avoiding environmental pollution is a new challenge for researchers. A possible solution to these problems is to recycle used sanitary masks and reuse them as reinforcements for building materials. This helps reduce mask-related waste around the world and has a positive impact on various properties of concrete. Some researchers have incorporated masks containing pulp and paper and admixtures into concrete and are using greasy clay waste masks to improve their mechanical properties [3]. Researchers have also studied the use of shredded fibers in the foundations of roads and sidewalks. Researchers at RMIT University are working on this technology. Possibility of recycling waste masks, including use in concrete.

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