

# RECYCLING OF PPE

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## Abstract:

After the inception of covid 19, the main crisis occurred outside the medical field was in the environment. The quantity of wastes rose above expected margin and went beyond control. Ppe are widely used and their disposals are a discussion point. These facial masks are of three layers, the inner layer of absorbent material such as cotton, the middle layer of non woven, non absorbent material like polypropylene and the outer layer of non absorbent material such as polyester or polyester blend. Polypropylene is a thermoplastic polymer used in a wide variety of applications. They can be recycled and has number '5'as resin identification code .when these are heated they gets the same structure as that of plastic. So how can this be sorted? And can make an economy from the solution. This research paper aims to 1. Recycle the ppe 2.reduce the environmental impacts 3.reduce the usage of resources 4.introducing cost efficient products in market

**Keywords — Recycling , plastic , covid 19, PPE**

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## I. INTRODUCTION

Plastic pollution is everywhere, where ever there is human there is plastic and there is pollution. There is even plastic left on mars by curiosity rover. The at most solution to remove these is to lit these plastic which cause even harsh problems in the environment. When these plastics re burned certain toxic chemicals releases in to the environment and these chemicals are now in the blood of every people including babies to be born.

Covid 19 lockdowns has caused a drop of about 5% in greenhouse gas emission according to unctad estimates, but not all measures to contain the pandemic have had a positive impact on environment .the use of personal protection equipment laid to a rise in plastic accumulation and the waste management is under crisis. Even though a great section of disposal works are carrying out in a well equipped and safer way there are exceptional cases also. Majority of common people still not aware of the proper disposal of facial masks and

hand gloves .according to recent research it is found that about 65 billion plastic gloves and 29 billion facial masks are consumed monthly in the world. The situation is still under risk and it requires more ppe than expected. In this research paper the current ppe disposal and waste management and the studied solution and innovations will be introduced.

## II. CURRENT PPE DISPOSAL

On a scale, 37 tones of biomedical wastes are generated in Kerala per day .in additional to this 18 tones of biomedical wastes are generated after the outbreak of covid 19.the main biomedical treatment plant in Kerala is in puthuserry in palakkad set up and managed by Indian Medical Association, the IMA Goes Eco-friendly (IMAGE) is the sole biomedical waste treatment and disposal facility in the state and was commissioned on December 14, 2003. The biomedical waste also began to accumulate as the state government set up more and more first-line treatment centers (FLTCs) to isolate

and treat COVID-19 patients. Currently, the plant has five incinerators. Two more incinerators with the double chamber will be installed at the plant in a couple of months. The existing incinerators have been running round the clock to meet the additional biomedical waste. The double-chamber incinerators will meet any emergencies in the future, and ensure the existing capacities of the plant will not be worn out.

### III. RECYCLING

One of the byproduct of incineration is fly ash. These ashes are mainly used for landfill but in accordance with this, it can also be used for many other purposes which can make an economy in market the first product is

#### A. PAVER BLOCKS

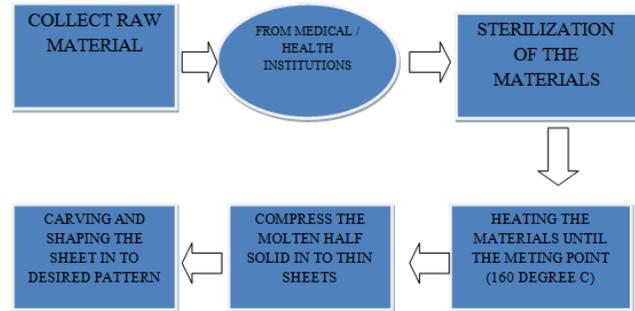
Fly ash has high compressive strength, they are light weight and have low water absorption and they are also a very good thermal resistant. This fly ash can be used as substitute for the fine aggregates or can reduce the quantity of fine aggregates there by reducing the use of natural resources.

These blocks show a high efficiency in non traffic areas like parks, residential areas, gardens etc. for the fabrication purpose it requires man labor and it also provide employment for many. Introducing this block to the market is bit challenging because there are already similar companies working on the same the product. Success won't come easy so the concerned authority should take proper measures and business ideas to get the attention of the customers. These blocks are having same properties of that of the conventional blocks.

#### B. STATIONARY ITEMS

Apart from incinerators these wastes are just burnt separately not in an open place inside proper sterilized condition .the PPE are made up of polypropylene .these are thermoplastic polymers which are used in a wide variety of applications. These can be recycled and has the number '5' as resin identification code. Flash point of atypical

composition is 260 degree C and they melting point is 130 to 171 degree C. usually the facial masks are three ply (three layers).the three ply material is made up of a melt –blown polymer .most commonly polypropylene placed between non-woven fabric .when heated it has the same structure as that of the plastic.



### IV. CONCLUSIONS

Until the covid scenario end , the use of PPE continues and there will be huge disposal of used PPE's. This paper study on how many ways this PPE waste can be recycled and can be used in an economical manner. There is no complete solution for plastic wastes but there are alternatives through which innovations can be established. This research person will further investigate about the possibilities of using this in Portland cements in the future.

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