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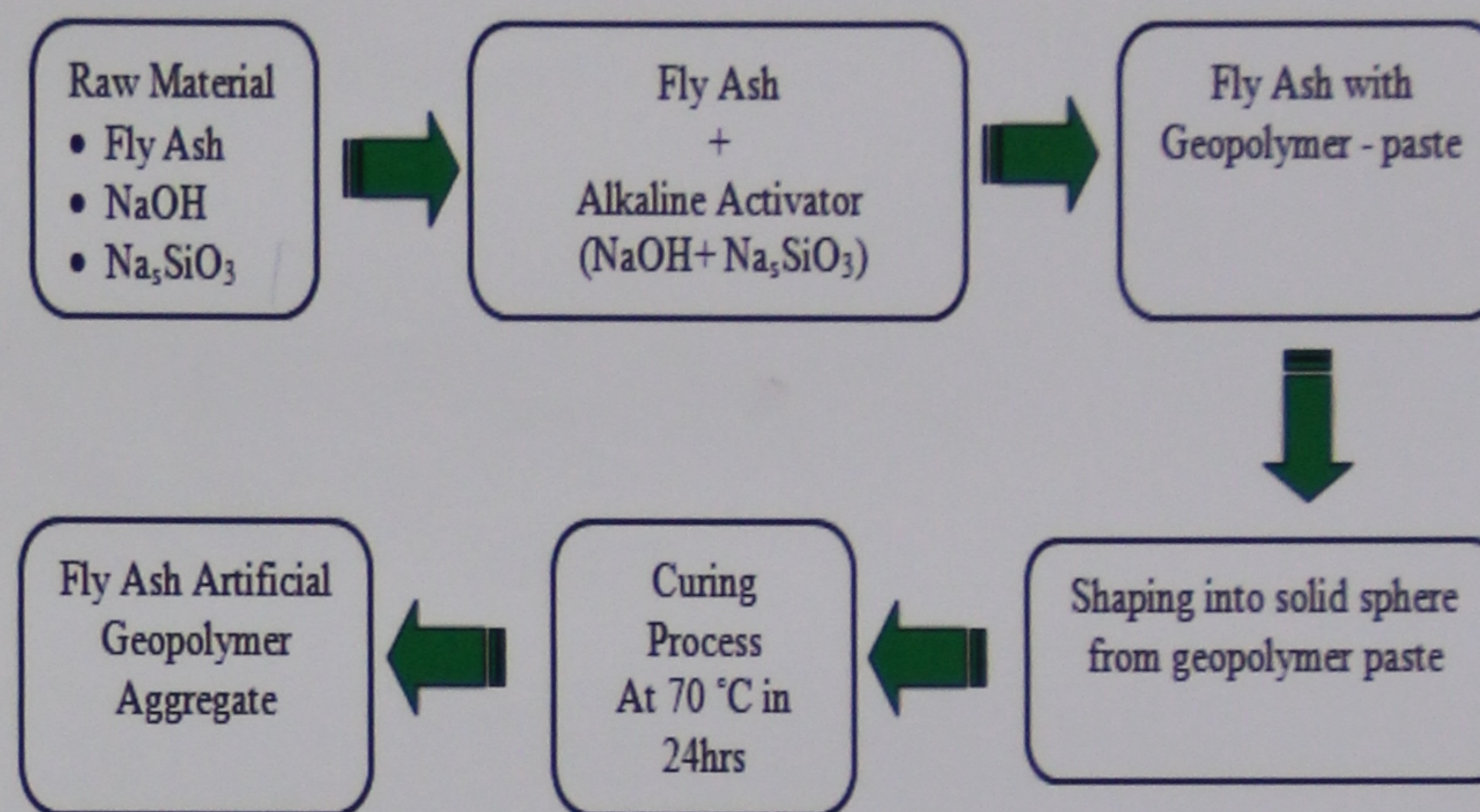
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FLY ASH ARTIFICIAL AGGREGATE

PRODUCT DESCRIPTION

Artificial aggregate with fly ash based geopolymer was evaluated as an aggregate that suitable used in concrete and lightweight concrete. This aggregate was produced by mixing the fly ash with alkaline activator which classified as geopolymer. The fly ash artificial geopolymer aggregate can be formed by curing process at 70°C for 24 hours. This artificial geopolymer aggregate have high strength, less water absorption and porosity with acceptable density which are comparable to the existence of aggregate in market. This aggregate can help to reduce global warming due to its geopolymerization process. Furthermore, the production of this fly ash artificial geopolymer aggregate is using low temperature processing.

PROCESS FLOW



PROBLEMS STATEMENT

- Pollution cause by Portland Cement
- Abundant amount of Fly Ash
- Extensive consumption of natural sources

PRODUCT ADVANTAGES

- Decrease CO₂ - Develop Green Technology
- Low Temperature Processing compared to other artificial aggregate
- Low Cost with Curing Temperature
- Simple Manufacturing Process
- Produced New Artificial geopolymer – using fly ash in construction industries

NOVELTIES

- Produce new artificial geopolymer aggregate to be used in construction industries fly ash.
- Cost saving on raw materials
- Production of artificial geopolymer aggregate with fly ash is environmental friendly (CO₂ released)

PRODUCT PERFORMANCES

PROPERTIES	NATURAL AGGREGATE	FLY ASH GEOPOLYMER AGGREGATE
Aggregate Sizes (Diameter)	Less than 25 mm	Less than 25 mm
Compressive Strength	20-35 MPa	15 - 65 MPa
Water Absorption	Less than 3%	0.5 - 7%
Density	2.3 kg/m ³	1.2 - 1.9 kg/m ³

POTENTIAL APPLICATION

- Artificial aggregate in concrete
- Insulator aggregate
- Road base materials
- Replacing normal aggregate in producing concrete
- Replacing normal aggregate in producing geopolymer concrete
- Lightweight aggregate in the lightweight application
- Masonry brick