

# THERMOCHEMICALLY ACTIVATED DRY CONCRETE FORMULATION



## BACKGROUND

Concrete production traditionally demands significant water and a longer curing timeline. In arid, cold, or extraterrestrial environments where water is scarce, and time is pressing regular concrete methods poses major challenges. There is a need for a method that reduces reliance on water, accelerates curing times, and maintains or enhances the structural integrity and thermal stability of the residing materials.

## DESCRIPTION

The innovators have formulated a new process for removing the need for water in concrete production by combining alkali activation with thermal processing using molten salts. The process involves mixing locally sourced aluminosilicate materials like fly ash and slag with molten salts and alkali materials, then heating to approximately 350°C. This enables rapid polymerization, forming a durable composite ideal for water-scarce settings. The material achieves significant strength, up to 60 MPa, within just two hours, and offers enhanced thermal stability through vacuum curing. This method accelerates construction timelines from days to mere hours, providing up to 200% greater strength and durability than conventional concrete.

## ADVANTAGES

- Rapid strength gain
- Enhanced durability
- High thermal stability

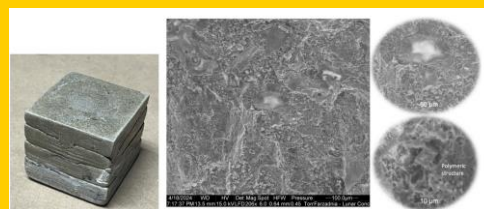
## APPLICATIONS

- Sustainable Precast Concrete- Reduced curing
- Lunar Construction- Waterless, fast outer space building
- Rapid Infrastructure Deployment- Fast recovery/ military applications.

## INTELLECTUAL PROPERTY

- Patent #2025033275

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*LTAC developed as a proof of concept.*

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