



GRANTED

(IN466022)

One part geopolymers composition and process thereof

Property or Test		Value	Value
Compressive Strength (MPa)	3 days	11.74	Standard code: IS 4031
	7 days	19.52	Part 6
	28 days	31.96	Loading Rate=100 N/s
Density (kg/m ³)	28 days	1863.37	-
Setting Time (minutes)	Initial	38	Standard code: IS 4031
	Final	555	Part 5
Recommended minimum time (days) needed for the removal of formwork or shuttering (based on strength gain)		12	In-situ use in field (Safety point of view)

NEED

The construction industry requires sustainable alternatives to traditional materials. What if industrial by-products like fly ash and red mud could be used to create high-strength, eco-friendly geopolymers for construction?

TECHNOLOGY OVERVIEW

This patent introduces a one-part geopolymer composition made from industrial by-products like fly ash, red mud, and silica fume. It provides a sustainable, high-strength solution for construction materials with reduced environmental impact.

TECHNOLOGY KEY FEATURES

Uses fly ash (53-91%), silica fume, red mud, quick lime, and sodium hydroxide; average particle size: 600nm-25µm; compressive strength: 11.74-56.15 MPa; simple one-step preparation process.

[Read more here](#)

MARKET ANALYSIS

The global geopolymer market is expected to grow at a CAGR of 25.3% from 2023 to 2033, driven by demand for eco-friendly construction materials. (Source: Market Research Future 2024)

Target Industries

1) Cement and concrete manufacturers adopting sustainable solutions; 2) Construction companies aiming to reduce carbon footprint; 3) Waste management and recycling companies focusing on industrial waste reuse.

AT A GLANCE

- SDG 9 (Industry, Innovation), SDG 12 (Responsible Consumption), SDG 13 (Climate Action)

Technology is available for licensing/ co-development.

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