

SAT Central Ideas
Simplifying the question

Example 3

Recent studies have explored the phenomenon of microbial-induced calcite precipitation (MICP), a process by which certain bacteria induce the formation of calcite in soils, potentially enhancing their strength and stability. This process, which naturally occurs at a slow rate in the natural environment, can be accelerated in a controlled manner in a lab to improve the mechanical properties of soil for construction purposes. Researchers have found that by injecting MICP-inducing bacteria into the soil, along with a nutrient-rich solution, they can significantly increase the soil's load-bearing capacity, offering an eco-friendly, sustainable alternative to traditional chemical-based soil stabilization methods. The resulting material can be used to strengthen concrete before it is poured, or repair cracks in existing concrete structures, thus increasing their lifespan.

Which choice best states the main idea of the text?

Choose 1 answer:

- The primary use of MICP in the construction industry is to repair cracks in existing concrete structures.
- Researchers have recently discovered the bacteria responsible for MICP and are still understanding how to apply this process in practical scenarios.
- MICP is a natural process that can be artificially accelerated to improve soil stability for construction, providing an alternative to chemical methods.
- Nutrient-rich solutions can be added to soil to accelerate MICP and increase the soil's load-bearing capacity.

Easier

Scientists have studied a process called microbial-induced calcite precipitation (MICP), where certain bacteria help form a hard substance in soil that makes it stronger. This process happens slowly in nature, but it can be sped up in a lab. By adding these bacteria and a nutrient solution to soil, scientists can improve its strength for construction. This method is more environmentally friendly than traditional chemical treatments. The material can also be used to repair cracks in concrete and make structures last longer.

Which choice best states the main idea of the text?

- a) MICP is mainly used to repair cracks in concrete structures.
- b) Scientists have recently found the bacteria that cause MICP and are still studying it.
- c) MICP is a natural process that can be sped up to strengthen soil for construction as an alternative to chemical methods.
- d) Adding nutrient solutions to soil is the main way to increase its strength.

turn over

Easiest

Scientists have studied a process called microbial-induced calcite precipitation (MICP). In this process, some bacteria help form a hard material in soil, which can make the soil stronger. This happens slowly in nature, but scientists can make it happen faster in a lab. By adding these bacteria and a nutrient solution to soil, they can make the soil stronger for building. This method is more environmentally friendly than using chemicals. The stronger material can also help fix cracks in concrete and make it last longer.

Which choice best shows the main idea of the text?

- a) MICP is mainly used to fix cracks in old concrete.
- b) Scientists have only just found the bacteria that cause MICP.
- c) MICP is a natural process that can be sped up to make soil stronger for building instead of using chemicals.
- d) Adding nutrients to soil is the main way to make it stronger.

