

Welcome to Xplorlabs: Sustainable Building Materials – Mycelium

Mycelium is a sustainable building material that has many benefits, including biodegradability, carbon-negative potential, low cost, termite proofing, insulation, use in remote settings, fire resistance, and compostability.

Explore the sustainable construction material – mycelium – as an alternative to concrete and plastic, and the potential of its use to improve fire safety, reduce waste, and capture carbon to combat climate change.

Instructional phases	Engage	Explore/Explain	Explore/Explain	Extension	Evaluate
Visual storyline					
Standards	NGSS H.S. Human Sustainability: ESS3.4: Evaluate or refine a technological solution that reduces impacts of human activities on natural systems. United Nations SDGs: 9 (Industry, Innovation, and Infrastructure), 11 (Sustainable Cities and Communities), and 12 (Responsible Consumption and Construction)				
Timing	Day 1	Days 2-5	Days 6-7	Day 8-9	Day 10
Overview	SUSTAINABLE BUILDING MATERIALS Intro Video (2 min): “Building Green – Sustainable Construction in Emerging Markets” Article : “Top 50 Sustainable Materials for Modern Architecture and Construction” Video (7m40s) “Can Mycelium Fungus Replace Concrete and Plastic?”	GROW MYCELIUM Project : GROW BIO (Teacher: Pre-mix - four days; Student: Grow -six days) Website : Grow Bio Website : “Ecovative: Molecular Mycotechnology” <i>Note: Students may have learned about fungi in a previous unit on soil ecosystems or sustainable food systems.</i>	SAFETY Video (41s): “What is Fire?” Video (31s): “Organic vs Synthetic Fuels” Interactive : How Does Fire Behave? Video (6m11s): “Energy and Combustion” Investigation 3 : Energy and Combustion (calorimetry lab) OR GROW BIO Lesson 5: “Is mycelium safe?” (flammability test)	DATA ANALYSIS Project : GROW BIO (results) Article : “New Comparison of Natural and Synthetic Home Furnishings”	LOOKING FORWARD Video (16m27s): “Fire Safety and Sustainability” CER Prompt: How is mycelium a safe and sustainable alternative to traditional building materials? CALL to ACTION: Design and conduct your own material safety test; create your own design in which to grow mycelium