



Lithified Technologies US, LLC
Santa Fe, New Mexico
Bob Sherwin, CEO

Lithified Technologies has created revolutionary products that many Geo-techs and Engineers are saying, “May be the biggest breakthrough in the history of Soil Sciences”

Lithification is a process involving naturally occurring minerals, in which sediments compact under pressure, expel connate fluids, creating porosity destruction through compaction and cementation, gradually becoming solid rock over millennia.

Lithified Technologies’ **Accelerated Lithification** process takes lessons learned from Mother Nature’s lithification process and uses an eco-friendly trade secret technology – LithTec™ – composed in part of naturally occurring chemicals to form the aluminosilicates necessary for cementation, and in combination with moisture and pressure (compaction), it turns soil into rock – with extreme load-bearing capacities in 24 hours!

LithTec has been used in a variety of applications that have been tested or monitored by Los Alamos National Laboratory:

- AUM technology (Abandoned Uranium Mines) LithTec U-Capping System
- Haul roads and mine tailings containment or encapsulation
- Chosen as Best New Technology for capping Superfund clean-up sites with LithTec Earth Barriers
- Selected for use in Hanford and Moab Superfund clean-up sites by 15 scientists from 8 National Laboratories
- LithTec Earth & Pond Liners for algae/bio-fuel production and agriculture
- Responsible mining solutions:
 - ✓ Mine Tailing Containment (GISTM)
 - ✓ Safer, cost-effective haul-roads



“LithTec™ Is one of the most significant geo-technical advancements in Soil Sciences.”
--Dr. Gilles Bussod, Los Alamos National Laboratory Scientist

Delivering Green Solutions to the Mining Industry

Designs for your haul-roads and your tailings management projects begin by contracting with Lithified and engaging the Lithified geotechnical team for:

- Geotechnical Sampling (sample appropriate cross sections, material variations)
- LithTec™ Blend Customization
- Product Performance Measurement
- Geotechnical Testing:
 - California Bearing Ratio – CBR
 - Unconfined Compressive Strength – UCS
 - Post Submersion Strength Testing
 - Modulus Derivative – Resilient Modulus
 - Plasticity Index – PI
 - Gradation – Soil Classification
 - Dispersion – Bound and non-dispersive
 - Shrink/Swell – For clay soils
- On-site guidance and measurement during and after installation

Engaging the Lithified Team is priced at \$10,000, requires the signing of a Laboratory Testing Authorization (LTA), and includes visits to your site by Lithified’s geo-technicians and their coordination of product delivery from blending partners and independent contractors associated with your project.

Safer Roads Require Less Maintenance

Top Reasons Why Roads Fail

1. Insufficient Load Bearing Capacity
2. Water infiltration



LithTec™ Road = Extreme Load Bearing Capacity & Resistance to Water

Copper Mining Property in the US

.....Delivering Solutions That Exceed Expectations

Existing haul roads at the mine required daily maintenance. Intermittent haul road failures caused delays. In search of safer roads, a five mile long, 24' wide, 10" deep haul-road was constructed across the mine's 10,000 acres of tailings. The haul road was built from the tailings and a 4% LithTec blend. It was installed under the guidance of Lithified's geotechnical and installation team, with the following extreme load-bearing results:



Copper Tailings to Extreme Loading Bearing Haul-road			
TEST TYPE	MINIMUMS	ACTUAL	
Dispersion Test	ND	ND	
Shrink/Swell	<.2	0	
UCS	>300	705.4	
Stress@Failure			
UCS	>.8	.957	
Strain@Failure			
Resilient Modulus	>100,000	920,235	

Following construction of the haul road, EPA tests proved that the tailings used to construct the road were fully encapsulated and not leaching any contaminants into the water table:

LithTec™ Passes U.S. EPA Synthetic Precipitation Leaching Procedure Tests - SPLP 1311 & SPLP 1312

RioTinto

Rio Tinto Kennecott Environmental Laboratory
CERTIFICATE OF ANALYSIS
Sample Type: EPA Method 1312 SPLP
 Date: 16-Aug-19

2500 S 9180 W
 Magna, UT 84044
 Phone (801) 569-7952

To: RICK HANSEN Submission Date: 07/22/2019

Sample Preparation: SW 846 Method 1312
 Metals Analysis: SW 846 Methods 6010C and 7471 QC Reference Sample:

Lab No.	Sample Description	Collection Date	Analysis Date	Analyte	Result	Reporting Limits	Units
CA12082	UT-019-00102-A	07/22/2019	07/26/2019	Arsenic	Below PQL	0.1	mg/L
			07/26/2019	Barium	0.2	0.1	mg/L
			07/26/2019	Cadmium	Below PQL	0.01	mg/L
			07/26/2019	Chromium	Below PQL	0.1	mg/L
			07/26/2019	Lead	Below PQL	0.05	mg/L
			07/30/2019	Mercury	Below PQL	0.0010	mg/L
			07/25/2019	pH	8.47		
			07/26/2019	Selenium	Below PQL	0.1	mg/L
			07/26/2019	Silver	Below PQL	0.1	mg/L

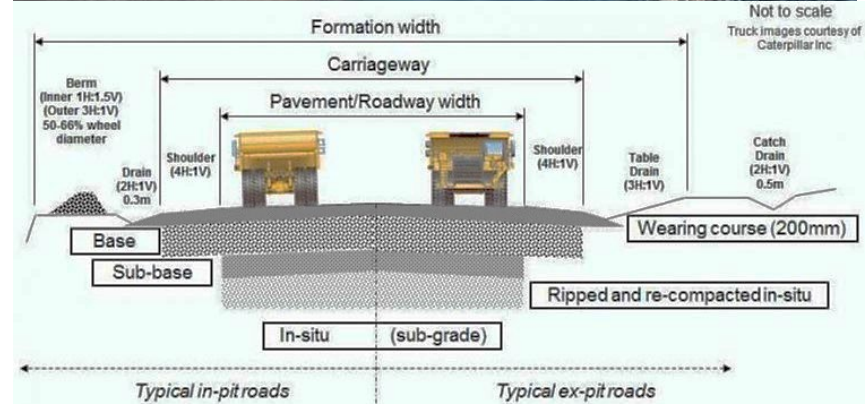
Next projects include:

- Construction of a water-resistant road for a 5-Mile underground tunnel (2023)
- Encapsulation of 10,000 acres of copper tailings at shallow depth to prevent the spread of wind-born contaminants

Haul Roads



LithTec™ Haul Roads Achieve Unprecedented Load Bearing Capacity



- The Lithtec™ customized formulations are a unique combination of High Strength and High Ductility
- LithTec™ is blended regionally across the US, is available for shipment in 1 or 2-ton supersacks or shipped in pneumatic trucks
- LithTec™ is laboratory tested and customized for every project, to optimize the performance in each material being treated
- LithTec™ is environmentally friendly
 - Zero (0) Hazard Category on SDS Sheet
 - Passes U.S. EPA Synthetic Precipitation Leaching Procedure Test 1311 & 1312
 - Demonstrates LithTec™ does not have any harmful chemicals that leach into the environment
- LithTec™ is safe and easy to install and is applied with a cement or lime spreader truck