

Effect of Waste Glass on Properties of Treated
Problematic Soils: A Comprehensive Review

A Seminar at
Soran University (SUN)



[Jamal Ismail Kakrasul](#)

This A Seminar at is arranged by SUN's
Engineering faculty, Civil and Enviromental Engineering
Department (DCEE)

eng.soran.edu.iq

پوخته

بابهتهكه پنداچوونهوه به بهكارهينانى شووشه پاشماوه (WG) دهكات وهك زيادكسريك بو باشتراكردنى تايبهتمةندييهكانى خاكه دانهوئيله وردهان، بهتايبهتى خاكه گلينييهكان، كه به شيوهيكى باو له بيناسازيدا بهكاردهينرين بهلام كنشهيان هميه بههوى مهيليان بو فراوانبوون لهكاتى تهريوون و بچووكبوونهميان لهكاتى وشكبوونهمدا. تويزينهوهكه ليكولينهوه لهوه دهكات كه چون WG كاتيك ورد دهكرت و تيكل به خاك دهكرت، كاريگمري لهسر تايبهتمةندييه فيزيائى و ميكانيكييهكانى خاكهكه دهيت.

الملخص

تتناول هذه المقالة استخدام الزجاج المهدور (WG) كمادة مضافة لتحسين خصائص التربة ذات الحبيبات الدقيقة، وخاصة التربة الطينية، والتي تستخدم عادة في البناء ولكنها تشكل مشكلة بسبب ميلها إلى التمدد عندما تكون رطبة والانكماش عندما تكون جافة. وتبحث الدراسة كيف يؤثر الزجاج المهدور، عندما يتم سحقه وخلطه بالتربة، على الخصائص الفيزيائية والميكانيكية للتربة.

Abstract

The article reviews the use of waste glass (WG) as an additive to improve the properties of fine-grained soils, particularly clayey soils, which are commonly used in construction but are problematic due to their tendency to expand when wet and shrink when dry. The study examines how WG, when crushed and mixed with soil, affects the soil's physical and mechanical properties.



Asst. Prof. Dr. Jamal Ismail Kakrasul (B.Sc., M.Sc., PhD) is the [Dean of Engineering](#) and an active lecturer at the [Department of Civil and Environmental Engineering \(DCEE\)](#), where he teaches civil engineering courses to a diverse range of students and promotes new, motivated, and creative research initiatives. He has created, devised, and taught multiple [STEMS courses](#) in several disciplines. He earned a B.Sc. in Civil Engineering from the [University of Duhok \(UOD\)](#) and an M.Sc. in Civil Engineering from [Salahaddin University \(SU\)/Erbil](#). He received his PhD in Civil Engineering with a focus in Geotechnical Engineering from the [University of Kansas in Lawrence](#), Kansas, USA. He is a firm believer that professional experience makes a teacher a more successful teacher by bringing real-world experience to the classroom.

About Soran University

[Soran University \(SUN\)](#) is located in the city of Soran, which is about a two-hour drive north-east of [Erbil](#) (Arbil, Hewlér), the capital of the [Kurdistan Region](#) of Iraq (KRIQ). The city is flanked by the famous Korek, Zozik, Henderén, and Biradost mountains. The medieval mountain village of [Rewandiz \(Rawanduz, ڕه‌واندز\)](#) is a stone-cast away, and the two cities share this lovely, harmonious upland. While waiting for its green, environmentally friendly building to be erected on a hilltop overlooking the cities of Soran and Rewandiz, its existing city campus has been meticulously set out to accommodate the lovely natural landscape. The new campus will be the first of its type, being walkable, balanced, powered by renewable energy, and compliant with all international environmental regulations. There are 5 Faculties in [SUN](#); [Faculty of Arts](#) (FAAR), [Faculty of Science](#) (FSCN), [Faculty of Education](#) (FEDU), [Faculty of Law](#), Political Science, and Management (FLAW/PSM), and [Faculty of Engineering](#) (FENG). Also, there is SUN research centre. Moreover, at SUN, there is a Language Center. SUN signed many Memoranda of Understandings (MoU) with many International Universities.

How to get here

Soran University (SUN) is located in the heart of the city of Soran. The main city campus is easily found on Google Maps for direction.