UNIVERSITAS
GADJAH MADA
Potensi Geothermal Sludge sebagai Substitusi Parsial Pasir pada Paving Block: Evaluasi Kualitas Teknis dan Pelindian Unsur Jejak
Wulandari Mega Pratiwi, Vempi Satriya Adi Hendrawan, S.T., M.Env., Ph.D
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

DAFTAR PUSTAKA

Agustinus, E.T.S., Syafri, I., Rosana, M.F., Zulkarnain, I., 2018. Scale Prevention Technique to Minimized Scaling on Re-Injection Pipes in Dieng Geothermal Field, Central Java Province, Indonesia. Indonesian Journal on Geoscience 5, 129–136. https://doi.org/10.17014/ijog.5.2.129-136

Ahmed, M., Qureshi, M.N., Mallick, J., Hasan, M.A., Hussain, M., 2019. Decision support model for design of high-performance concrete mixtures using two-phase AHP-TOPSIS approach. Advances in Civil Engineering 2019. https://doi.org/10.1155/2019/1696131

Aini, N., Pusat, S., Perumahan, L., Permukiman, D., Litbang, B., Pekerjaan, K., Dan, U., Rakyat, P., Panyawungan, J., Wetan, C., Bandung, K., 2018. KUAT TEKAN DAN PELINDIAN LOGAM BERAT PAVING BLOCK DARI LIMBAH BAHAN BERBAHAYA BERACUN (B3) PENGOLAHAN LOGAM TERKAIT DENGAN STANDAR NASIONAL INDONESIA (SNI) Compression Strength and Heavy Metal Leaching of Paving Block of Hazardous Material Waste (Metal Processing) Related to the Indonesia National Standard.

Alghamdi, S.J., 2023. Determining the mix design method for normal strength concrete using machine learning. Journal of Umm Al-Qura University for Engineering and Architecture 14, 95–104. https://doi.org/10.1007/s43995-023-00022-4

Arcolezi, K.H., da Silva, R.G., Soriano, L., Borrachero, M. V., Monzó, J., Payá, J., Tashima, M.M., Akasaki, J.L., 2023. Effect of Aggregates Packing with the Maximum Density Methodology in Pervious Concrete. Sustainability (Switzerland) 15. https://doi.org/10.3390/su15064939

ASTM International, 2019. ASTM C-168 Fly Ash Spesification and Pozzolan.

Badan Standarisasi Nasional, 2016. SNI 1970-2016 Metode Uji Berat Jenis dan Penyerapan Air Agregat Halus.

Badan Standarisasi Nasional, 2015. SNI 2049-2015 Semen Portland.

Badan Standarisasi Nasional, 2014. SNI 0302-2014 Semen Portland Pozolan.

Potensi Geothermal Sludge sebagai Substitusi Parsial Pasir pada Paving Block: Evaluasi Kualitas Teknis dan Pelindian Unsur Jejak
Wulandari Mega Pratiwi, Vempi Satriya Adi Hendrawan, S.T., M.Env., Ph.D
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Badan Standarisasi Nasional, 2013. SNI 2847-2013 Persyaratan Beton Struktural untuk Bangunan Gedung.

Badan Standarisasi Nasional, 2012. SNI ASTM C136-2012 Metode Uji untuk Analisis Saringan Halus dan Agregat Kasar (ASTM C 136-06). Jakarta.

Badan Standarisasi Nasional, 2011. SNI 1971-2011 Cara Uji Kadar Air Total Agregat dengan Pengeringan.

Badan Standarisasi Nasional, 2008. SNI 1965-2008 Cara Uji Penentuan Kadar Air untuk Tanah dan Batuan di Laboratorium.

Badan Standarisasi Nasional, 2002a. SNI 03-6820-2002 Spesifikasi Agregat Halus untuk Pekerjaan Adukan dan Plasteran dengan Bahan Dasar Semen. Jakarta.

Badan Standarisasi Nasional, 2002b. SNI 03-6861-1-2002 Spesifikasi Bahan Bangunan Bagian A - Bahan Bangunan bukan Logam.

Badan Standarisasi Nasional, 2000. SNI 03-2834-2000 Tata cara pembuatan rencana campuran beton normal. Jakarta.

Badan Standarisasi Nasional, 1998. SNI 03-4804-1998 Metode Pengujian Berat Isi dan Rongga Udara dalam Agregat.

Badan Standarisasi Nasional, 1996a. SNI 03-0691-1996 Bata Beton (Paving Block). Jakarta.

Badan Standarisasi Nasional, 1996b. SNI 03-4142-1996 Metode Pengujian Jumlah Bahan dalam Agregat yang Lolos Saringan Nomor 200 (0,0075 mm). Jakarta.

Badan Standarisasi Nasional, 1991. SNI 03-2461-1991 Spesifikasi Agregat Ringan untuk Beton Struktural.

Brewe, J.E., Myers, J.J., t.t. Brewe and Myers 2005 NBC PARTICLE SIZE OPTIMIZATION FOR REDUCED CEMENT HIGH STRENGTH CONCRETE.

Brouwers, H.J.H., Radix, H.J., 2005. Self-compacting concrete: Theoretical and experimental study. Cem. Concr. Res. 35, 2116–2136. https://doi.org/10.1016/j.cemconres.2005.06.002

UNIVERSITAS
GADJAH MADA
Potensi Geothermal Sludge sebagai Substitusi Parsial Pasir pada Paving Block: Evaluasi Kualitas Teknis dan Pelindian Unsur Jejak
Wulandari Mega Pratiwi, Vempi Satriya Adi Hendrawan, S.T., M.Env., Ph.D
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Chen, S., Zhang, Q., Andrews-Speed, P., Mclellan, B., 2020. Quantitative assessment of the environmental risks of geothermal energy: A review. J. Environ. Manage. https://doi.org/10.1016/j.jenvman.2020.111287

Chotpantarat, S., Amasvata, C., 2020. Influences of pH on transport of arsenate (As5+) through different reactive media using column experiments and transport modeling. Sci. Rep. 10. https://doi.org/10.1038/s41598-020-59770-1

Cornelis, G., Etschmann, B., Van Gerven, T., Vandecasteele, C., 2012. Mechanisms and modelling of antimonate leaching in hydrated cement paste suspensions. Cem. Concr. Res. 42, 1307–1316. https://doi.org/10.1016/j.cemconres.2012.06.004

Cornelis, G., Johnson, C.A., Gerven, T. Van, Vandecasteele, C., 2008. Leaching mechanisms of oxyanionic metalloid and metal species in alkaline solid wastes: A review. Applied Geochemistry. https://doi.org/10.1016/j.apgeochem.2008.02.001

Cuesta, A., Santacruz, I., De la Torre, A.G., Dapiaggi, M., Zea-Garcia, J.D., Aranda, M.A.G., 2021. Local structure and Ca/Si ratio in C-S-H gels from hydration of blends of tricalcium silicate and silica fume. Cem. Concr. Res. 143. https://doi.org/10.1016/j.cemconres.2021.106405

Dashrath Kanawade, B., Ratnakar Nawale, S., 2017. Strength and Durability of Concrete Paver Block.

Davraz, M., Gunduz, L., 2005. Engineering properties of amorphous silica as a new natural pozzolan for use in concrete. Cem. Concr. Res. 35, 1251–1261. https://doi.org/10.1016/j.cemconres.2004.11.016

Fennis, S.A.A.M., Walraven, J.C., 2012. Using particle packing technology for sustainable concrete mixture design.

Gao, W., Ni, W., Zhang, Y., Li, Y., Shi, T., Li, Z., 2020. Investigation into the semi-dynamic leaching characteristics of arsenic and antimony from solidified/stabilized tailings using metallurgical slag-based binders. J. Hazard. Mater. 381. https://doi.org/10.1016/j.jhazmat.2019.120992

Ghasemi, Y., 2017. Aggregates in Concrete Mix Design. Lulea University of Technology.

UNIVERSITAS
GADJAH MADA
Potensi Geothermal Sludge sebagai Substitusi Parsial Pasir pada Paving Block: Evaluasi Kualitas Teknis dan Pelindian Unsur Jejak
Wulandari Mega Pratiwi, Vempi Satriya Adi Hendrawan, S.T., M.Env., Ph.D
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Girskas, G., Nagrockienė, D., Skripkiūnas, G., 2017. Analysis of durability testing of concrete landscaping units. Constr. Build. Mater. 137, 513–519. https://doi.org/10.1016/j.conbuildmat.2017.01.095

Halim, C.E., Short, S.A., Scott, J.A., Amal, R., Low, G., 2005. Modelling the leaching of Pb, Cd, As, and Cr from cementitious waste using PHREEQC. J. Hazard. Mater. 125, 45–61. https://doi.org/10.1016/j.jhazmat.2005.05.046

Hettiarachchi, H.A.C.K., Mampearachchi, W.K., t.t. An analytical packing density model incorporating the effect of particle shape, composition and size ratio to optimize concrete mixtures Author 1.

Ikhsan, J., Rezanaldy, A., Rozainy, M.A.Z.Mohd.R., 2021. Analysis of Sand Mining Impacts on Riverbed in the Downstream of the Progo River, Indonesia. IOP Conf. Ser. Mater. Sci. Eng. 1144, 012065. https://doi.org/10.1088/1757-899x/1144/1/012065

Isaia, G.C., Gastaldini, A.L.G., Moraes, R., t.t. Physical and pozzolanic action of mineral additions on the mechanical strength of high-performance concrete.

Iwański, M., Mazurek, G., Buczyński, P., Iwański, M.M., 2022. Effects of hydraulic binder composition on the rheological characteristics of recycled mixtures with foamed bitumen for full depth reclamation. Constr. Build. Mater. 330. https://doi.org/10.1016/j.conbuildmat.2022.127274

Kaish, A.B.M.A., Odimegwu, T.C., Zakaria, I., Abood, M.M., Nahar, L., 2021. Properties of concrete incorporating alum sludge in different conditions as partial replacement of fine aggregate. Constr. Build. Mater. 284. https://doi.org/10.1016/j.conbuildmat.2021.122669

Kwan, A.K.H., Ng, P.L., Huen, K.Y., 2014. Effects of fines content on packing density of fine aggregate in concrete. Constr. Build. Mater. 61, 270–277. https://doi.org/10.1016/j.conbuildmat.2014.03.022

Liu, Y., Zhuge, Y., Chow, C.W.K., Keegan, A., Li, D., Pham, P.N., Huang, J., Siddique, R., 2020. Utilization of drinking water treatment sludge in concrete paving blocks: Microstructural analysis, durability and leaching properties. J. Environ. Manage. 262. https://doi.org/10.1016/j.jenvman.2020.110352

Potensi Geothermal Sludge sebagai Substitusi Parsial Pasir pada Paving Block: Evaluasi Kualitas Teknis dan Pelindian Unsur Jejak
Wulandari Mega Pratiwi, Vempi Satriya Adi Hendrawan, S.T., M.Env., Ph.D
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

M. Hamza Hasnain., U.Javed., A.Ali., M.S.Z., 2021. Eco frinedly utilization of rice husk ash and bagasse ash blend as partial sand replacement in self compacting concrete.

Matsanga, N., Nheta, W., Chimwani, N., 2023. A Review of the Grinding Media in Ball Mills for Mineral Processing. Minerals. https://doi.org/10.3390/min13111373

Mojapelo, K.S., Kupolati, W.K., Burger, E.A., Ndambuki, J.M., Snyman, J., Sadiku, E.R., Ibrahim, I.D., 2025. Optimising the mechanical properties of concrete for non-structural applications through partial replacement of fine aggregates with wastewater sludge. Sci. Rep. 15. https://doi.org/10.1038/s41598-025-04151-9

Nurkholis Meiyati, I., Sri Agustin, R., Supri Murtiono, E., t.t. PEMANFAATAN LUMPUR GEOTHERMAL (GEOTHERMAL SLUDGE) UNTUK PENGGANTI SEBAGIAN SEMEN TERHADAP KUAT TEKAN MORTAR SEBAGAI SUPLEMEN BAHAN AJAR MATA KULIAH TEKNOLOGI BETON PROGRAM STUDI PENDIDIKAN TEKNIK BANGUNAN UNS.

Olin D. Whitescarver., J.T.Kwan., K.Chan., D.P.H., 1990. US4900360A. United States Patent.

Ouro Koura, B.I., Hosseinpoor, M., Yahia, A., Kadri, E.H., Kaci, A., 2020. A new proportioning approach of low and normal binder self-consolidating concrete based on the characteristics of fine mortar and granular skeleton. Constr. Build. Mater. 239. https://doi.org/10.1016/j.conbuildmat.2019.117892

P. Kumar Mehta dan Paulo J. M. Monteiro, 2013. Concrete Microstructure, Properties, and Matterials.

Pambudi, N.A., Itoi, R., Yamashiro, R., CSS Syah Alam, B.Y., Tusara, L., Jalilinasrabady, S., Khasani, J., 2015. The behavior of silica in geothermal brine from Dieng geothermal power plant, Indonesia. Geothermics 54, 109–114. https://doi.org/10.1016/j.geothermics.2014.12.003

Pemanfaatan Limbah lumpur panas bumi dari PLTP Dieng sebagai bahan pozzolan, t.t.

Petrus, H.T.B.M., Olvianas, M., Shafiyurrahman, M.F., Pratama, I.G.A.A.N., Jenie, S.N.A., Astuti, W., Nurpratama, M.I., Ekaputri, J.J., Anggara, F., 2022. Circular Economy of Coal Fly Ash and Silica Geothermal for Green Geopolymer: Characteristic and Kinetic Study. Gels 8. https://doi.org/10.3390/gels8040233

Potensi Geothermal Sludge sebagai Substitusi Parsial Pasir pada Paving Block: Evaluasi Kualitas Teknis dan Pelindian Unsur Jejak
Wulandari Mega Pratiwi, Vempi Satriya Adi Hendrawan, S.T., M.Env., Ph.D
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Putra, R.E., Ismayana, A., Putra, H., 2025. Optimizing the Use of Recycled Drinking Water Treatment Sludge in Paving Block Production. Jurnal Pengelolaan Sumberdaya Alam dan Lingkungan 15, 710–723. https://doi.org/10.29244/jpsl.15.4.710

Sakinah, N., Yanti, G., Megasari, S.W., t.t. KORELASI FAKTOR AIR SEMEN TERHADAP KUAT TEKAN PERVIOUS CONCRETE.

Samudro, G., Hadiwidodo, M., Fakhrian, A.R., 2016. PENENTUAN CAMPURAN LUMPUR LAPINDO SEBAGAI SUBSTITUSI PASIR DAN SEMEN DALAM PEMBUATAN PAVING BLOCK RAMAH LINGKUNGAN.

Singh, S.B., Munjal, P., Thammishetti, N., 2015. Role of water/cement ratio on strength development of cement mortar. Journal of Building Engineering 4, 94–100. https://doi.org/10.1016/j.jobe.2015.09.003

Singh, T.S., Pant, K.K., 2006. Solidification/stabilization of arsenic containing solid wastes using portland cement, fly ash and polymeric materials. J. Hazard. Mater. 131, 29–36. https://doi.org/10.1016/j.jhazmat.2005.06.046

Siregar, A.P.N., Rafiq, M.I., Mulheron, M., 2017. Experimental investigation of the effects of aggregate size distribution on the fracture behaviour of high strength concrete. Constr. Build. Mater. 150, 252–259. https://doi.org/10.1016/j.conbuildmat.2017.05.142

Sun, H., Luo, X., Ren, Z., Zhong, J., Jin, Y., Cui, H., Wang, Y., Hanein, T., 2025. Effect of carbonation curing on C3S, C2S, C3A and C4AF phases: microstructure and reactivity mechanisms. Journal of Building Engineering 112. https://doi.org/10.1016/j.jobe.2025.113819

Tzeng, G.-H., Huang, J.-J., 2011. Multiple Attribute Decision Making: Methods and Applications.

Uddin, M.A., Jameel, M., Sobuz, H.R., Islam, M.S., Hasan, N.M.S., 2013. Experimental study on strength gaining characteristics of concrete using Portland Composite Cement. KSCE Journal of Civil Engineering 17, 789–796. https://doi.org/10.1007/s12205-013-0236-x

Universitas Diponegoro, 2019. History of X-Ray Diffraction.

Potensi Geothermal Sludge sebagai Substitusi Parsial Pasir pada Paving Block: Evaluasi Kualitas Teknis dan Pelindian Unsur Jejak
Wulandari Mega Pratiwi, Vempi Satriya Adi Hendrawan, S.T., M.Env., Ph.D
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

V10-Protein structures Program for today:- Structures from protein X-ray crystallography- Statistics of protein structures- Statistical potentials 1 V10 Processing of Biological Data, t.t.

Yogha Luthfizar, G., Sri PujiP, F., Akbari, T., 2019. PEMANFAATAN LIMBAH PASIR SILIKA SEBAGAI BAHAN PENGGANTI PASIR UNTUK PEMBUATAN PAVING BLOCK.

Yoon, J., Jafari, K., Tokpatayeva, R., Peethamparan, S., Olek, J., Rajabipour, F., 2022. Characterization and quantification of the pozzolanic reactivity of natural and non-conventional pozzolans. Cem. Concr. Compos. 133. https://doi.org/10.1016/j.cemconcomp.2022.104708

Zhang, Y., Sun, X., Zhu, X., Xiao, J., 2022. Multi-criteria optimization of concrete mixes incorporating cenosphere waste and multi-minerals. J. Clean. Prod. 367. https://doi.org/10.1016/j.jclepro.2022.133102