Pemanfaatan Sludge SPAM Terkalsinasi sebagai Supplementary Cementitious Material (SCM) pada Paving
Block : Analisis Kelayakan Teknis
Kayla Putri Aulia, Ir. Suprapto Siswosukarto, Ph.D.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

DAFTAR PUSTAKA

Altheman, D., Andréia Gachet, L., Siviero Pires, M., & Cristina Cecche Lintz, R. (2023). Water treatment waste as supplementary cementitious material. *Materials Today: Proceedings*, S2214785323023192. https://doi.org/10.1016/j.matpr.2023.04.418

Azizah, R. N., Saputri, T., & Prayogo, W. (2022). Identification of Sludge Production In Water Treatment Installations of Urban Drinking Water Companies. *Journal of Community Based Environmental Engineering and Management*, *6*(1). https://doi.org/10.23969/jcbeem.v6i1.5247

Bhusal, M. R., Fonseka, C. W., Muthukumaran, S., Joseph, P., & Sandanayake, M. (2025a). Water treatment sludge as a partial cement replacement material: Preliminary investigations and future perspectives. *Innovative Infrastructure Solutions*, *10*(9), 447. https://doi.org/10.1007/s41062-025-02236-y

Bhusal, M. R., Fonseka, C. W., Muthukumaran, S., Joseph, P., & Sandanayake, M. (2025b). Water treatment sludge as a partial cement replacement material: Preliminary investigations and future perspectives. *Innovative Infrastructure Solutions*, *10*(9), 447. https://doi.org/10.1007/s41062-025-02236-y

Cullity, B., & Stock, S. (2014). *Elements of X-ray diffraction*. Pearson Education, 2014.

Doughmi, K., Baba, K., Taha, Y., Bahhou, A., Jaait, M., & Assernannas, J. (2026). Hydration of ternary blended cements integrating Drinking Water Treatment Sludge as an artificial pozzolanic material. *Construction and Building Materials*, *506*, 144996. https://doi.org/10.1016/j.conbuildmat.2025.144996

Duan, W., Zhuge, Y., Pham, P. N., W. K. Chow, C., Keegan, A., & Liu, Y. (2020). Utilization of Drinking Water Treatment Sludge as Cement Replacement to Mitigate Alkali–Silica Reaction in Cement Composites. *Journal of Composites Science*, *4*(4), 171. https://doi.org/10.3390/jcs4040171

Elyasigorji, F., Farajiani, F., Hajipour Manjili, M., Lin, Q., Elyasigorji, S., Farhangi, V., & Tabatabai, H. (2023). Comprehensive Review of Direct and Indirect Pozzolanic Reactivity Testing Methods. *Buildings*, *13*(11), 2789. https://doi.org/10.3390/buildings13112789

Fernandes, I. V., Lima, V. M. E., Nascimento, C. F. G., Carvalho, H. G., Santos, C. L. L., & Melo Neto, A. A. (2025). Valorization of textile sludge for use as supplementary cementitious material – Benefiting processes, pozzolanic activity, and application in no-slump concrete. *Construction and Building Materials*, *458*, 139619. https://doi.org/10.1016/j.conbuildmat.2024.139619

Gartner, E., & Sui, T. (2018). Alternative cement clinkers. *Cement and Concrete Research*, *114*, 27–39. https://doi.org/10.1016/j.cemconres.2017.02.002

Hussain, I., Ali, B., Rashid, M. U., Amir, M. T., Riaz, S., & Ali, A. (2021). Engineering properties of factory manufactured paving blocks utilizing steel slag as cement

Pemanfaatan Sludge SPAM Terkalsinasi sebagai Supplementary Cementitious Material (SCM) pada Paving
Block : Analisis Kelayakan Teknis
Kayla Putri Aulia, Ir. Suprapto Siswosukarto, Ph.D.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

replacement. *Case Studies in Construction Materials*, *15*, e00755. https://doi.org/10.1016/j.cscm.2021.e00755

Juenger, M. C. G., Snellings, R., & Bernal, S. A. (2019). Supplementary cementitious materials: New sources, characterization, and performance insights. *Cement and Concrete Research*, *122*, 257–273. https://doi.org/10.1016/j.cemconres.2019.05.008

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. *Journal of Environmental Management*, *262*, 110352. https://doi.org/10.1016/j.jenvman.2020.110352

Lothenbach, B. (2010). *Supplementary Cementitipus Materials*.

Mattoso, A. P., Cunha, S., Aguiar, J., Duarte, A., & Lemos, H. (2024). Valorization of Water Treatment Sludge for Applications in the Construction Industry: A Review. *Materials*, *17*(8), 1824. https://doi.org/10.3390/ma17081824

Messa, G. N., Jesus, A. M. D. D., & Fiore, F. A. (2025). Beneficial use of sludge from water treatment plants as a multiple resource: Potential and limitations. *Resources, Conservation & Recycling Advances*, *25*, 200247. https://doi.org/10.1016/j.rcradv.2025.200247

Morselli, L. B. G. A., Do Carmo, L. A. G., Dos Santos, J. T., Da Silva, J. K. P., Quadro, M. S., & Andreazza, R. (2025). Water treatment sludge as a sustainable cement material in Brazil. *Construction and Building Materials*, *484*, 141770. https://doi.org/10.1016/j.conbuildmat.2025.141770

Paris, J. M., Roessler, J. G., Ferraro, C. C., DeFord, H. D., & Townsend, T. G. (2016). A review of waste products utilized as supplements to Portland cement in concrete. *Journal of Cleaner Production*, *121*, 1–18. https://doi.org/10.1016/j.jclepro.2016.02.013

Ruviaro, A. S., Silvestro, L., Scolaro, T. P., De Matos, P. R., & Pelisser, F. (2021). Use of calcined water treatment plant sludge for sustainable cementitious composites production. *Journal of Cleaner Production*, *327*, 129484. https://doi.org/10.1016/j.jclepro.2021.129484

Sabir, B. B., Wild, S., & Bai, J. (2001). Metakaolin and calcined clays as pozzolans for concrete: A review. *Cement and Concrete Composites*, *23*(6), 441–454. https://doi.org/10.1016/S0958-9465(00)00092-5

Scrivener, K. L., John, V. M., & Gartner, E. M. (2018). Eco-efficient cements: Potential economically viable solutions for a low-CO2 cement-based materials industry. *Cement and Concrete Research*, *114*, 2–26. https://doi.org/10.1016/j.cemconres.2018.03.015

Shamaki, M., Adu-Amankwah, S., & Black, L. (2021). Reuse of UK alum water treatment sludge in cement-based materials. *Construction and Building Materials*, *275*, 122047. https://doi.org/10.1016/j.conbuildmat.2020.122047

Shamaki, M. Y. (2021). *The use of a UK Alum Water Treatment Sludge as a Supplementary Cementitious Material – Characteristics, Hydration and Performance*.

UNICEF, & Bappenas. (2024). *Peta Jalan Air Minum Aman Indonesia*.

Pemanfaatan Sludge SPAM Terkalsinasi sebagai Supplementary Cementitious Material (SCM) pada Paving
Block : Analisis Kelayakan Teknis
Kayla Putri Aulia, Ir. Suprapto Siswosukarto, Ph.D.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Velumani, P., & Senthilkumar, S. (2018). Production of sludge-incorporated paver blocks for efficient waste management. *Journal of the Air & Waste Management Association*, *68*(6), 626–636. https://doi.org/10.1080/10962247.2017.1395373

Vollpracht, A., & Brameshuber, W. (2016). Binding and leaching of trace elements in Portland cement pastes. *Cement and Concrete Research*, *79*, 76–92. https://doi.org/10.1016/j.cemconres.2015.08.002

Wong, A. W., Chew, H. Y., Bashir, M. J. K., Aldahdooh, M. A. A., & Ng, C. A. (2025). Production of mortar with calcined alum sludge as partial cement replacement. *E3S Web of Conferences*, *603*, 02008. https://doi.org/10.1051/e3sconf/202560302008

Zhu, H., Chen, W., Cheng, S., Yang, L., Wang, S., & Xiong, J. (2022). Low carbon and high efficiency limestone-calcined clay as supplementary cementitious materials (SCMs): Multi-indicator comparison with conventional SCMs. *Construction and Building Materials*, *341*, 127748. https://doi.org/10.1016/j.conbuildmat.2022.127748