

DAFTAR PUSTAKA

- Abdelhady, A., Hui, L., Zhang, H., 2021. Comprehensive study to accurately predict the water permeability of pervious concrete using constant head method. *Constr Build Mater* 308, 125046. <https://doi.org/10.1016/j.conbuildmat.2021.125046>
- ACI Committee 522, 2010. Report on Pervious Concrete. *Aci* 522R-10 42.
- Akkaya, A., Çağatay, İ.H., 2021. Investigation of the density, porosity, and permeability properties of pervious concrete with different methods. *Constr Build Mater* 294. <https://doi.org/10.1016/j.conbuildmat.2021.123539>
- Akosile, S.I., Ajibade, F.O., Lasisi, K.H., Ajibade, T.F., Adewumi, J.R., 2020. Performance evaluation of locally produced ceramic filters for household water treatment in Nigeria. *Sci Afr* 7, e00218. <https://doi.org/10.1016/j.sciaf.2019.e00218>
- Alighardashi, A., Mehrani, M.J., Fakhravar, N., Ramezaniapour, A.M., 2019. Material design and characterization of pervious concrete reactive barrier containing nano-silica and fine pumice aggregate. *Asian Journal of Civil Engineering* 20, 49–56. <https://doi.org/10.1007/s42107-018-0087-3>
- Alighardashi, A., Mehrani, M.J., Ramezaniapour, A.M., 2018. Pervious concrete reactive barrier containing nano-silica for nitrate removal from contaminated water. *Environmental Science and Pollution Research* 25, 29481–29492. <https://doi.org/10.1007/s11356-018-3008-9>
- Ali, M.K., Kareem, Q.M.S., 2014. Experimental Study on Mechanical and Hydrological Properties of Pervious Concrete with Different Water Cement Ratio. *Science Technology & Engineering* 3, 107–113.
- Alimohammadi, V., Maghfouri, M., Nourmohammadi, D., Azarsa, P., Gupta, R., Saberian, M., 2021. Stormwater runoff treatment using pervious concrete modified with various nanomaterials: A comprehensive review. *Sustainability (Switzerland)* 13. <https://doi.org/10.3390/su13158552>
- Ali, S.I., 2010. Alternatives for safe water provision in urban and peri-urban slums. *J Water Health* 8, 720–734. <https://doi.org/10.2166/wh.2010.141>
- Al-Khaiat, H., Fattuhi, N., 2001. Long-term strength development of concrete in arid conditions. *Cem Concr Compos* 23, 363–373. [https://doi.org/10.1016/S0958-9465\(01\)00004-X](https://doi.org/10.1016/S0958-9465(01)00004-X)
- Azad, A., Saeedian, A., Mousavi, S.F., Karami, H., Farzin, S., Singh, V.P., 2020. Effect of zeolite and pumice powders on the environmental and physical characteristics of green

concrete filters. Constr Build Mater 240, 117931.
<https://doi.org/10.1016/j.conbuildmat.2019.117931>

BAPPENAS, K.B.P.P.N., 2021. LAPORAN PELAKSANAAN PENCAPAIAN TPB/SDGs TAHUN 2021.

Bawa, R., Dwivedi, P., 2019. Impact of land cover on groundwater quality in the Upper Floridan Aquifer in Florida, United States. *Environmental Pollution* 252, 1828–1840.
<https://doi.org/10.1016/j.envpol.2019.06.054>

Bielefeldt, A.R., Kowalski, K., Schilling, C., Schreier, S., Kohler, A., Summers, R.S., 2010. Removal of virus to protozoan sized particles in point-of-use ceramic water filters. *Water Res* 44, 1482–1488. <https://doi.org/10.1016/j.watres.2009.10.043>

Bielefeldt, A.R., Kowalski, K., Summers, R.S., 2009. Bacterial treatment effectiveness of point-of-use ceramic water filters. *Water Res* 43, 3559–3565.
<https://doi.org/10.1016/j.watres.2009.04.047>

[BPS] Badan Pusat Statistik, 2021. Produk domestik regional bruto Kabupaten Penajam Paser Utara Menurut Pengeluaran 2016 - 2020.

CAWST, 2009. 2009 Annual Report, Centre for Affordable Water and Sanitation Technology. Canada. <https://doi.org/10.1002/j.1941-9635.2010.tb00576.x>

Chandrappa, A.K., Biligiri, K.P., 2016. Comprehensive investigation of permeability characteristics of pervious concrete: A hydrodynamic approach. *Constr Build Mater* 123, 627–637. <https://doi.org/10.1016/j.conbuildmat.2016.07.035>

Cheng, A., Chao, S.J., Lin, W.T., 2013. Effects of leaching behavior of calcium ions on compression and durability of cement-based materials with mineral admixtures. *Materials* 6, 1851–1872. <https://doi.org/10.3390/ma6051851>

Chen, X., Wang, G., Dong, Q., Zhao, X., Wang, Y., 2020. Microscopic characterizations of pervious concrete using recycled Steel Slag Aggregate. *J Clean Prod* 254, 120149. <https://doi.org/10.1016/j.jclepro.2020.120149>

Chung, G., Lansey, K., Blowers, P., Brooks, P., Ela, W., Stewart, S., Wilson, P., 2008. A general water supply planning model: Evaluation of decentralized treatment. *Environmental Modelling and Software* 23, 893–905.
<https://doi.org/10.1016/j.envsoft.2007.10.002>

Cotruvo, J.A., Andrew, R., Herman, R., 2014. Point of Use and Point of Entry Treatment Technologies Applicable in the Home for Controlling Chemical, Microbial, and Aesthetic Contaminants in Drinking Water, dalam: *Comprehensive Water Quality and Purification*. hlm. 196–211. <https://doi.org/10.1016/B978-0-12-382182-9.00034-7>

- Crump, J.A., Okoth, G.O., Slutster, L., Ogaja, D.O., Keswick, B.H., Luby, S.P., 2004. Effect of point-of-use disinfection, flocculation and combined flocculation - Disinfection on drinking quality in western Kenya. *J Appl Microbiol* 97, 225–231. <https://doi.org/10.1111/j.1365-2672.2004.02309.x>
- Dahman, Y., 2017. Nanopolymers**By Yaser Dahman; Kevin Deonanan; Timothy Dontosos; and Andrew Iammatteo, dalam: *Nanotechnology and Functional Materials for Engineers*. hlm. 121–144. <https://doi.org/10.1016/b978-0-323-51256-5.00006-x>
- de Larrard, Thomas, Benboudjema, Farid, Colliat, J.-B., Torrenti, J.-M., Deleruyelle, Frédéric, de Larrard, T, Benboudjema, F, Colliat, J., Torrenti, J., Deleruyelle, F, 2010. Concrete calcium leaching at variable temperature: Experimental data and numerical model inverse identification. *Comput Mater Sci* 35–45. <https://doi.org/10.1016/j.commatsci.2010.04.017i>
- De Lima Isaac, R., Dos Santos, L.U., Tosetto, M.S., Franco, R.M.B., Guimarães, J.R., 2014. Urban water reuse: Microbial pathogens control by direct filtration and ultraviolet disinfection. *J Water Health* 12, 465–473. <https://doi.org/10.2166/wh.2014.221>
- Deo, O., Neithalath, N., 2011. Compressive response of pervious concretes proportioned for desired porosities. *Constr Build Mater* 25, 4181–4189. <https://doi.org/10.1016/j.conbuildmat.2011.04.055>
- De Weerd, K., Plusquellec, G., Belda Revert, a., Geiker, M.R., Lothenbach, B., 2019. Effect of carbonation on the pore solution of mortar. *Cem Concr Res* 118, 38–56. <https://doi.org/10.1016/j.cemconres.2019.02.004>
- Downs, B., 2023. RRUFF Sample Data.
- Dumayas, D.R., Montebon, G.F., Reloj, C.J., Diego, F.M.S., Tamayo, J.M., Valenzuela, I., 2018. Transportable water purifying device using biosand filtration and ultraviolet light treatment with android application for monitoring. *Journal of Telecommunication, Electronic and Computer Engineering* 10, 169–173.
- Effendi, H., 2003. *Telaah Kualitas Air*. Kanisius, Yogyakarta, Indonesia.
- Ekström, T., 2001. *Leaching of Concrete: Experiments and Modelling*. Lund University.
- Estrada-Garcia, T., Hodges, K., Hecht, G.A., Tarr, P.I., 2013. Chapter 8 - *Escherichia coli*, dalam: *Foodborne Infections and Intoxications (Fourth Edition)*.
- Faisal, G.H., Jaeel, A.J., Al-Gasham, T.S., 2020. BOD and COD reduction using porous concrete pavements. *Case Studies in Construction Materials* 13, e00396. <https://doi.org/10.1016/j.cscm.2020.e00396>

FMIPA ITB, K., 2020. X-Ray Micro-CT Scanner Facility [WWW Document]. URL <https://kpmfmipa-itb.id/ct-scan/>

Galan, I., Purgstaller, B., Grengg, C., Müller, B., Dietzel, M., 2022. Amorphous and crystalline CaCO₃ phase transformation at high solid/liquid ratio – Insight to a novel binder system. *J Cryst Growth* 580, 126465. <https://doi.org/10.1016/j.jcrysgro.2021.126465>

Haga, K., Sutou, S., Hironaga, M., Tanaka, S., Nagasaki, S., 2005. Effects of porosity on leaching of Ca from hardened ordinary Portland cement paste. *Cem Concr Res* 35, 1764–1775. <https://doi.org/10.1016/j.cemconres.2004.06.034>

Harada, S., Yanbe, M., 2018. Adsorption by and artificial release of zinc and lead from porous concrete for recycling of adsorbed zinc and lead and of porous concrete to reduce urban non-point heavy metal runoff. *Chemosphere* 197, 451–456. <https://doi.org/10.1016/j.chemosphere.2018.01.044>

Hardianto, Widiarto, J., Maulidiyah, S.T., 2015. Hasil Survey Kualitas Air di Daerah Istimewa Yogyakarta Tahun 2015. Daerah Istimewa Yogyakarta.

Haselbach, L.M., Freeman, R.M., 2006. Vertical porosity distributions in pervious concrete pavement. *ACI Mater J* 103, 452–458.

Hendricks, D.W., 2011. Fundamental of Water Treatment Unit Processes, Water Treatment Unit Processes. IWA Publishing, Boca Raton. <https://doi.org/10.1201/9781315276052>

Holmes, R.R., Hart, M.L., Kevern, J.T., 2017. Heavy metal removal capacity of individual components of permeable reactive concrete. *J Contam Hydrol* 196, 52–61. <https://doi.org/10.1016/j.jconhyd.2016.12.005>

Hosseini, S.A., Toghroli, A., 2021. Effect of mixing Nano-silica and Perlite with pervious concrete for nitrate removal from the contaminated water. *Advances in Concrete Construction* 11, 531–544. <https://doi.org/10.12989/acc.2021.11.6.531>

Howe, K.J., Hand, D.W., Crittenden, J.C., Trussell, R.R., Tchobanoglous, G., 2012. Principles of Water Treatment. John Wiley & Sons, Inc., New Jersey.

Huang, J., Zhang, Y., Sun, Y., Ren, J., Zhao, Z., Zhang, J., 2021. Evaluation of pore size distribution and permeability reduction behavior in pervious concrete. *Constr Build Mater* 290, 123228. <https://doi.org/10.1016/j.conbuildmat.2021.123228>

Hu, H.H., Zuo, X.B., Cui, D., Tang, Y.J., 2019. Experimental study on leaching-abrasion behavior of concrete in flowing solution with low velocity. *Constr Build Mater* 224. <https://doi.org/10.1016/j.conbuildmat.2019.07.125>

Huisman, L., Wood, W.E., 1974. Slow sand filtration. *WORLD HLTH ORGAN. Sw.F.16*.

- Hu, N., Zhang, J., Xia, S., Han, R., Dai, Z., She, R., Cui, X., Meng, B., 2020. A field performance evaluation of the periodic maintenance for pervious concrete pavement. *J Clean Prod* 263, 121463. <https://doi.org/10.1016/j.jclepro.2020.121463>
- Ibrahim, A., Mahmoud, E., Yamin, M., Patibandla, V.C., 2014. Experimental study on Portland cement pervious concrete mechanical and hydrological properties. *Constr Build Mater* 50, 524–529. <https://doi.org/10.1016/j.conbuildmat.2013.09.022>
- Irawan, R.R., 2013. Semen Portland di Indonesia untuk Aplikasi Beton Kinerja Tinggi.
- Ives, K.J., 1970. Review Paper - Rapid Filtration. *Rapid Filtration* 4, 201–223.
- Jegatheesan, V., Vigneswaran, S., 2005. Deep bed filtration: Mathematical models and observations. *Crit Rev Environ Sci Technol* 35, 515–569. <https://doi.org/10.1080/10643380500326432>
- Joseph Mark Brown, 2007. Effectiveness of Ceramic Filtration for Drinking Water Treatment in Cambodia. Chapel Hill.
- Joshi, T., Dave, U., 2022. Development of Mixture Design of Pervious Concrete with Changing Coarse Aggregate Size. *Journal of The Institution of Engineers (India): Series A* 103, 733–745. <https://doi.org/10.1007/s40030-022-00660-2>
- Junling, W., Jiangtao, W., Xueming, W., Cuimin, F., Tao, C., Lihua, S., Junqi, L., 2018. The adsorption capacity of the base layer of pervious concrete pavement prepared with additives for typical runoff pollutants on. *JSTOR. Current Science*. 114. <https://doi.org/https://doi.org/26495074>
- Kamulyan, B., 2014. Karakteristik Hidraulik Filtrasi Dan Cucibalik Filter Beton.
- Kamulyan, B., Nurrochmad, F., Triatmadja, R., 2012. Efektivitas penahanan partikel lempung montmorillonite pada filter beton pasir (Effectiveness of montmorillonite clay attachment on concrete sand filter), dalam: Annual Engineering Seminar “Towards Sustainable Engineering.”
- Kamulyan, B., Nurrochmad, F., Triatmadja, R., Sunjoto, 2011. The head loss development and turbidity removal of the filtration using concrete sand filter with various cement to sand ratio, dalam: The 4th ASEAN Environmental Engineering Conference.
- Kamulyan, B., Nurrochmad, F., Triatmadja, R., Sunjoto, S., 2009. Capacity of Concrete Sand Filter to Treat High Turbid Water, dalam: International Conference on Sustainable Development for Water and Wastewater Treatment. Yogyakarta, Indonesia.
- Kim, G.M., Jang, J.G., Khalid, H.R., Lee, H.K., 2017. Water purification characteristics of pervious concrete fabricated with CSA cement and bottom ash aggregates. *Constr Build Mater* 136, 1–8. <https://doi.org/10.1016/j.conbuildmat.2017.01.020>

- Lawrence, R.M., Mays, T.J., Rigby, S.P., Walker, P., D'Ayala, D., 2007. Effects of carbonation on the pore structure of non-hydraulic lime mortars. *Cem Concr Res* 37, 1059–1069. <https://doi.org/10.1016/j.cemconres.2007.04.011>
- Lee, M.G., Tia, M., Chuang, S.H., Huang, Y., Chiang, C.L., 2014. Pollution and purification study of the pervious concrete pavement material. *Journal of Materials in Civil Engineering* 26, 1–9. [https://doi.org/10.1061/\(ASCE\)MT.1943-5533.0000916](https://doi.org/10.1061/(ASCE)MT.1943-5533.0000916)
- Lin, W., Cheng, A., Huang, R., Chen, C., Zhou, X., 2011. Effect of calcium leaching on the properties of cement-based composites. *Journal Wuhan University of Technology, Materials Science Edition* 26, 990–997. <https://doi.org/10.1007/s11595-011-0350-x>
- Long, W.J., Ye, T.H., Li, L.X., Feng, G.L., 2019. Electrochemical characterization and inhibiting mechanism on calcium leaching of graphene oxide reinforced cement composites. *Nanomaterials* 9. <https://doi.org/10.3390/nano9020288>
- López-Carrasquillo, V., Hwang, S., 2017. Comparative assessment of pervious concrete mixtures containing fly ash and nanomaterials for compressive strength, physical durability, permeability, water quality performance and production cost. *Constr Build Mater* 139, 148–158. <https://doi.org/10.1016/j.conbuildmat.2017.02.052>
- Lukito, H., Yogafanny, E., Suharwanto, Azizah, S.U., Utama, V.F., Safitri, N.D., 2021. Investigation of Nitrate Groundwater Quality in Sidoarum Village , Godean District , Sleman Regency , Special Region of Yogyakarta. *Jurnal Mineral Energi dan Lingkungan* 5, 27–33.
- Maadji, R., 2018. Karakteristik Filtrasi dan Cucibalik Filter Beton untuk Air Minum. Universitas Gadjah mada.
- Maadji, R., Triatmadja, R., Nurrochmad, F., Sunjoto, 2017a. The Concrete Filter Mix Design for Water Treatment, dalam: Proceedings of the Second IAHS Panta Rhei International Conference on Water System Knowledge Innovation and its Practices in Developing Countries.
- Maadji, R., Triatmadja, R., Nurrochmad, F., Sunjoto, 2016a. The Development of Concrete Filter for Drinking Water Filtration, dalam: Proceedings International Seminar on Water Resilience in a Changing World. hlm. 711–721.
- Maadji, R., Triatmadja, R., Nurrochmad, F., Sunjoto, 2016b. Reduksi Bakteri E.Coli dalam Filtrasi Filter Beton untuk Air Minum, dalam: Prosiding Pertemuan Ilmiah Tahunan PIT XXXIII & Kongres XII HATHI. Semarang, Indonesia, hlm. 137–146.
- Maadji, R., Triatmadja, R., Nurrochmad, F., Sunjoto, S., 2017b. Characteristics of Concrete Filter for Drinking Water, dalam: Proceedings of the 37th IAHR World Congress. hlm. 2705–2713.

- Majersky, G., 2008. Concrete Filtering Systems and Methods. US 2008/0023404 A1.
- Marinoni, N., Pavese, A., Voltolini, M., Merlini, M., 2008. Long-term leaching test in concretes: An X-ray powder diffraction study. *Cem Concr Compos* 30, 700–705. <https://doi.org/10.1016/j.cemconcomp.2008.05.004>
- Marion, A.M., De Lanève, M., De Grauw, A., 2005. Study of the leaching behaviour of paving concretes: Quantification of heavy metal content in leachates issued from tank test using demineralized water. *Cem Concr Res* 35, 951–957. <https://doi.org/10.1016/j.cemconres.2004.06.014>
- Montgomery, M.A., Elimelech, M., 2007. Water And Sanitation in Developing Countries: Including Health in the Equation. *Environ Sci Technol* 41, 17–24. <https://doi.org/10.1021/es072435t>
- Müllauer, W., Beddoe, R.E., Heinz, D., 2015. Leaching behaviour of major and trace elements from concrete: Effect of fly ash and GGBS. *Cem Concr Compos* 58, 129–139. <https://doi.org/10.1016/j.cemconcomp.2015.02.002>
- Mulu, A., Jacob, P., Dwarakish, G.S., 2022. Hydraulic Performance of Pervious Concrete Based on Small Size Aggregates. *Advances in Materials Science and Engineering* 2022. <https://doi.org/10.1155/2022/2973255>
- Muthu, M., Chandrasekharapuram Ramakrishnan, K., Santhanam, M., Rangarajan, M., Kumar, M., 2019. Heavy Metal Removal and Leaching from Pervious Concrete Filter: Influence of Operating Water Head and Reduced Graphene Oxide Addition. *Journal of Environmental Engineering* 145, 1–9. [https://doi.org/10.1061/\(asce\)ee.1943-7870.0001551](https://doi.org/10.1061/(asce)ee.1943-7870.0001551)
- Muthu, M., Santhanam, M., Kumar, M., 2018. Pb removal in pervious concrete filter: Effects of accelerated carbonation and hydraulic retention time. *Constr Build Mater* 174, 224–232. <https://doi.org/10.1016/j.conbuildmat.2018.04.116>
- Na, B., Yan, B., 2021. Influence of temperature history on calcium leaching resistance of hydraulic concrete, dalam: *IOP Conference Series: Earth and Environmental Science*. IOP Publishing Ltd. <https://doi.org/10.1088/1755-1315/804/2/022057>
- Nadia, Fauzi, A., 2011. Pengaruh Kadar Silika Pada Agregat Halus Campuran Beton Terhadap Peningkatan Kuat Tekan. *Kontruksia* 3, 35–43.
- Ndjomgoue-Yossa, A.C., Nanseu-Njiki, C.P., Ngameni, E., 2022. Effect of pH on Escherichia coli Removal by Electrocoagulation and Elimination Kinetics after Treatment. *J Chem*. <https://doi.org/10.1155/2022/5249368>

- Neamitha, M., Supraja, T.M., 2017. Influence of Water Cement Ratio and The Size of Aggregate on The Properties Of Pervious Concrete. *International Refereed Journal of Engineering and Science (IRJES)* 6, 09–16.
- Neithalath, N., Bentz, D.P., Sumanasooriya, M.S., 2010. Predicting the permeability of pervious concrete. *Concrete international* 32, 35–40.
- Nigay, P.M., Salifu, A.A., Obayemi, J.D., White, C.E., Nzihou, A., Soboyejo, W.O., 2020. Assessment of Ceramic Water Filters for the Removal of Bacterial , Chemical , and Viral Contaminants 146, 1–7. [https://doi.org/10.1061/\(ASCE\)EE.1943-7870.0001749](https://doi.org/10.1061/(ASCE)EE.1943-7870.0001749)
- N.R., P.V.L., Saritha, V., Chowdhary, K.S., Mallika, G., Kumar, B.S.S.S.H., 2012. Biosand Filter for Removal of Chemical Contaminants from Water. *Journal of Advanced Laboratory Research in Biology* 3, 103–108.
- Omarova, A., Tussupova, K., Hjorth, P., Kalishev, M., Dosmagambetova, R., 2019. Water supply challenges in rural areas: A case study from central Kazakhstan. *Int J Environ Res Public Health* 16. <https://doi.org/10.3390/ijerph16050688>
- Padan, E., Bibi, E., Ito, M., Krulwich, T.A., 2005. Alkaline pH homeostasis in bacteria: New insights. *Biochim Biophys Acta Biomembr.* <https://doi.org/10.1016/j.bbamem.2005.09.010>
- Park, S.B., Tia, M., 2004. An experimental study on the water-purification properties of porous concrete. *Cem Concr Res* 34, 177–184. [https://doi.org/10.1016/S0008-8846\(03\)00223-0](https://doi.org/10.1016/S0008-8846(03)00223-0)
- Peraturan Menteri Kesehatan Republik Indonesia No. 2 Tahun 2023, 2023. Peraturan Menteri Kesehatan Republik Indonesia No. 2 Tahun 2023 tentang Peraturan Pelaksanaan Peraturan Pemerintah No. 66 Tahun 2014 tentang Kesehatan Lingkungan.
- Peraturan Menteri Kesehatan Republik Indonesia No. 32 Thn 2017, 2017. Peraturan Menteri Kesehatan Republik Indonesia Nomor 32 Tahun 2017 Tentang Standar Baku Mutu Kesehatan Lingkungan Dan Persyaratan Kesehatan Air Untuk Keperluan Higiene Sanitasi, Kolam Renang, Solus Per Aqua dan Pemandian Umum, Peraturan Menteri kesehatan Republik Indonesia.
- Pereira da Costa, F.B., Haselbach, L.M., da Silva Filho, L.C.P., 2021. Pervious concrete for desired porosity: Influence of w/c ratio and a rheology-modifying admixture. *Constr Build Mater* 268, 121084. <https://doi.org/10.1016/j.conbuildmat.2020.121084>
- Peter-Varbanets, M., Zurbrugg, C., Swartz, C., Pronk, W., 2009. Decentralized systems for potable water and the potential of membrane technology. *Water Res* 43, 245–265. <https://doi.org/10.1016/j.watres.2008.10.030>

- Pilon, B.S., Tyner, J.S., Yoder, D.C., Uchanan, J.R., 2019. The effect of pervious concrete on water quality parameters: A Case Study. *Water (Switzerland)* 11. <https://doi.org/10.3390/w11020263>
- Pooi, C.K., Ng, H.Y., 2018. Review of low-cost point-of-use water treatment systems for developing communities. *NPJ Clean Water* 1. <https://doi.org/10.1038/s41545-018-0011-0>
- Prameitya, A., Darjati, Sari, E., 2018. Penurunan Kadar FE dengan Membran Keramik pada Air Sumur (Studi Kasus Pada Wilayah Kerja Puskesmas Putat Jaya Tahun 2018). *Gema Kesehatan Lingkungan* 16, 204–212.
- Prayogo, T., Tegaly, A., Tresnadi, H., Riset, B., Nasional, I., 2021. Tinjauan Geologi Deposit Bijih Pada Daerah Kalirejo, Kulon Progo. *Jurnal Rekayasa Pertambangan* 1, 1–12.
- Przydatek, G., Kanownik, W., 2019. Impact of small municipal solid waste landfill on groundwater quality. *Environ Monit Assess* 191, 1–14. <https://doi.org/10.1007/s10661-019-7279-5>
- Qin, Y., Yang, H., Deng, Z., He, J., 2015. Water permeability of pervious concrete is dependent on the applied pressure and testing methods. *Advances in Materials Science and Engineering* 2015, 1–7. <https://doi.org/10.1155/2015/404136>
- Rao, Y., Ding, Y., Sarmah, A.K., Liu, D., Pan, B., 2020. Vertical distribution of pore-aggregate-cement paste in statically compacted pervious concrete. *Constr Build Mater* 237, 1–11. <https://doi.org/10.1016/j.conbuildmat.2019.117605>
- Rayner, J., Skinner, B., Lantagne, D., 2013. Current practices in manufacturing locally-made ceramic pot filters for water treatment in developing countries. *Journal of Water Sanitation and Hygiene for Development* 3, 252–261. <https://doi.org/10.2166/washdev.2013.178>
- Reyes Gómez, V.M., Gutiérrez, M., Nájera Haro, B., Núñez López, D., Alarcón Herrera, M.T., 2017. Groundwater quality impacted by land use/land cover change in a semiarid region of Mexico. *Groundw Sustain Dev* 5, 160–167. <https://doi.org/10.1016/j.gsd.2017.06.003>
- Ripperger, S., Gösele, W., Alt, C., Loewe, T., 2013. Filtration, 1. Fundamentals, dalam: *Ullmann's Encyclopedia of Industrial Chemistry*. Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany, hlm. 1–38. https://doi.org/10.1002/14356007.b02_10.pub3
- Romero, D.A.D., de Almeida Silva, M.C., Chaúque, B.J.M., Benetti, A.D., 2020. Biosand filter as a point-of-use water treatment technology: Influence of turbidity on microorganism removal efficiency. *Water (Switzerland)* 12. <https://doi.org/10.3390/w12082302>
- Sandoval, G.F.B., de Moura, A.C., Jussiani, E.I., Andrello, A.C., Toralles, B.M., 2020a. Proposal of maintenance methodology for pervious concrete (PC) after the phenomenon of clogging. *Constr Build Mater* 248, 118672. <https://doi.org/10.1016/j.conbuildmat.2020.118672>

- Sandoval, G.F.B., Galobardes, I., De Moura, A.C., Toralles, B.M., 2020b. Hydraulic behavior variation of pervious concrete due to clogging. *Case Studies in Construction Materials* 13, e00354. <https://doi.org/10.1016/j.cscm.2020.e00354>
- Sari, A.Y., 2016. Asosiasi Mineral Bijih Hubungan dengan Sumber Endapan Pasir Besi pada Daerah Kecamatan Grabag, Ngombol, dan Purwodadi Kabupaten Purworejo Propinsi Jawa Tengah. Universitas Pembangunan Nasional “Veteran” Yogyakarta, Yogyakarta.
- Shabalala, A.N., 2021. Utilisation of Pervious Concrete for Removal of Heavy Metals in Contaminated Waters: Opportunities and Challenges, dalam: *World Congress on Civil, Structural, and Environmental Engineering*. hlm. 1–8. <https://doi.org/10.11159/iceptp21.lx.302>
- Shabalala, A.N., Ekolu, S.O., Diop, S., Solomon, F., 2017. Pervious concrete reactive barrier for removal of heavy metals from acid mine drainage – column study. *J Hazard Mater* 323, 641–653. <https://doi.org/10.1016/j.jhazmat.2016.10.027>
- Silva, A., Fuchs, S., 2015. Intermittent Slow Sand Filtration for Drinking Water Treatment in Developing Countries Intermittent Slow Sand Filtration for Drinking Water Treatment in Developing Countries. <https://doi.org/10.13140/RG.2.1.1828.1449>
- Sitanggang, P.Y., 2016. Sistem Pengolahan Air Minum Terdesentralisasi dengan Teknologi Membran Sistem Pengolahan Air Minum Terdesentralisasi dengan Teknologi Membran. SNI 01-0220-1987, 1987. Air minum.
- Soliman, Mona Y M, Halem, D. Van, Medema, G., 2020. International Journal of Hygiene and Virus removal by ceramic pot filter disks : Effect of bio film growth and surface cleaning 224. <https://doi.org/10.1016/j.ijheh.2019.113438>
- Soliman, Mona Y.M., van Halem, D., Medema, G., 2020. Virus removal by ceramic pot filter disks: Effect of biofilm growth and surface cleaning. *Int J Hyg Environ Health* 224. <https://doi.org/10.1016/j.ijheh.2019.113438>
- Solpuker, U., Sheets, J., Kim, Y., Schwartz, F.W., 2014. Leaching potential of pervious concrete and immobilization of Cu, Pb and Zn using pervious concrete. *J Contam Hydrol* 161, 35–48. <https://doi.org/10.1016/j.jconhyd.2014.03.002>
- Sumampouw, O.J., 2010. Kandungan Kalsium pada Air Sumur yang dikonsumsi Para Penderita Penyakit Batu Ginjal di Kecamatan Ratatotok Kabupaten Minahasa Tenggara. *Jurnal Biomedik* 2, 27–32.
- Sumanasooriya, M.S., Neithalath, N., 2011. Pore structure features of pervious concretes proportioned for desired porosities and their performance prediction. *Cem Concr Compos* 33, 778–787. <https://doi.org/10.1016/j.cemconcomp.2011.06.002>

- Sumra, Y., Payam, S., Zainah, I., 2020. The pH of Cement-based Materials: A Review. Journal Wuhan University of Technology, Materials Science Edition. <https://doi.org/10.1007/s11595-020-2337-y>
- Suprihatin, Suparno, O., 2013. Teknologi Proses Pengolahan Air untuk Mahasiswa dan Praktisi Industri. Penerbit IPB Press, Bogor.
- S.V.Maruti Prasad, 2013. A Low Cost Water Treatment by Using a Natural Coagulant. Int J Res Eng Technol 02, 239–242. <https://doi.org/10.15623/ijret.2013.0210036>
- Taghizadeh, M.M., Torabian, A., Borghei, M., Hassani, A.H., 2007. A study of feasibility for water purification using vertical porous concrete filter. International Journal of Environmental Science and Technology 4, 505–512. <https://doi.org/10.1007/BF03325987>
- Thornton, L.A., Burchell, R.K., Burton, S.E., Lopez-Villalobos, N., Pereira, D., MacEwan, I., Fang, C., Hatmodjo, A.C., Nelson, M.A., Grinberg, A., Velathanthiri, N., Gal, A., 2018. The Effect of Urine Concentration and pH on the Growth of Escherichia Coli in Canine Urine In Vitro. J Vet Intern Med 32. <https://doi.org/10.1111/jvim.15045>
- Tjokrodinuljo, K., 2007. Teknologi Beton. Biro Penerbit KMTS FT UGM, Yogyakarta, Indonesia.
- Tolba, E., Wang, S., Wang, X., Neufurth, M., Ackermann, M., Muñoz-Espí, R., Abd El-Hady, B.M., Schröder, H.C., Müller, W.E.G., 2020. Self-healing properties of bioinspired amorphous CaCO₃/polyphosphate-supplemented cement. Molecules 25. <https://doi.org/10.3390/molecules25102360>
- Triatmadja, R., 2008. Kajian Awal Prospek Filter Beton Pasir Sebagai Teknologi Tepat Filtrasi Air Bersih, dalam: Seminar Nasional Teknologi Tepat Guna Penanganan Sarana Prasarana di Indonesia. hlm. 1–9.
- Undang-Undang Republik Indonesia No. 7 Thn 2004, 2004. Undang-Undang Republik Indonesia No. 7 Tahun 2004 tentang Sumber Daya Air. https://doi.org/10.1007/978-3-030-16565-9_2
- UN-Water, 2019. National systems to support drinking-water, sanitation and hygiene: global status report 2019.
- Vadas, T.M., Smith, M., Luan, H., 2017. Leaching and retention of dissolved metals in particulate loaded pervious concrete columns. J Environ Manage 190, 1–8. <https://doi.org/10.1016/j.jenvman.2016.12.047>
- Van Der Kooij, D., Schellart, J., Hiemstra, P., 1998. Distributing drinking water without disinfectant: Highest achievement or height of folly?, dalam: Water Supply. hlm. 49–59. <https://doi.org/10.2166/aqua.1999.0003>

- Vedachalam, S., MacDonald, L.H., Omoluabi, E., Olaolorun, F., Otupiri, E., Schwab, K.J., 2017. The role of packaged water in meeting global targets on improved water access. *Journal of Water Sanitation and Hygiene for Development* 7, 369–377. <https://doi.org/10.2166/washdev.2017.155>
- Vijayalakshmi, R., 2021. Recent Studies on the Properties of Pervious Concrete; A Sustainable Solution for Pavements and Water Treatment. *Civil and Environmental Engineering Reports* 31, 54–84. <https://doi.org/10.2478/ceer-2021-0034>
- WHO/UNICEF, 2019. Progress on Drinking Water , Sanitation and Hygiene, Launch version July 12 Main report Progress on Drinking Water , Sanitation and Hygiene. <https://doi.org/10.1111 / tmi.12329>
- Wick, K., Heumesser, C., Schmid, E., 2012. Groundwater nitrate contamination: Factors and indicators. *J Environ Manage* 111, 178–186. <https://doi.org/10.1016/j.jenvman.2012.06.030>
- Wijeyawardana, P., Nanayakkara, N., Gunasekara, C., Karunarathna, A., Law, D., Pramanik, B.K., 2022. Improvement of heavy metal removal from urban runoff using modified pervious concrete. *Science of the Total Environment* 815, 152936. <https://doi.org/10.1016/j.scitotenv.2022.152936>
- Wilks, J.C., Slonczewski, J.L., 2007. pH of The Cytoplasm and Periplasm of Escherichia coli: Rapid Measurement by Green Fluorescent Protein Fluorimetry. *J Bacteriol* 189. <https://doi.org/10.1128/JB.00615-07>
- World Health Organization (WHO), the United Nations Children’s Fund (UNICEF), 2021. Five Years into The SDGs Progress on Household Drinking Water, Sanitation and Hygiene.
- Xu, W., Yang, H., Mao, Q., Luo, L., Deng, Y., 2022. Removal of Heavy Metals from Acid Mine Drainage by Red Mud–Based Geopolymer Pervious Concrete: Batch and Long–Term Column Studies. *Polymers (Basel)* 14. <https://doi.org/10.3390/polym14245355>
- Yang, H., Liu, R., Zheng, Z., Liu, H., Gao, Y., Liu, Y., 2018. Experimental Study on Permeability of Concrete. *IOP Conf Ser Earth Environ Sci* 108, 1–6. <https://doi.org/10.1088/1755-1315/108/2/022067>
- Yang, H., Xu, S., Chitwood, D.E., Wang, Y., 2020. Ceramic water filter for point-of-use water treatment in developing countries: Principles, challenges and opportunities. *Front Environ Sci Eng* 14, 1–10. <https://doi.org/10.1007/s11783-020-1254-9>
- Yanita, R., 2020. Semen PCC sebagai Material Green Construction dan Kinerja Beton yang Dihasilkan. *Jurnal Sains dan Teknologi* 19, 13–18.

- Yogafanny, E., Fuchs, S., Obst, U., 2014. Study of Slow Sand Filtration in Removing Total Coliforms and E.Coli. *Jurnal Sains & Teknologi Lingkungan* 6, 107–116. <https://doi.org/10.20885/jstl.vol6.iss2.art4>
- Yogafanny, E., Triatmadja, R., Kamulyan, B., Nurrochmad, F., Supraba, I., 2021. Erratum to: Suspended solids and bacteria removal mechanisms in ceramic filter and pervious concrete filter: a review. *E3S Web of Conferences* 325, 04009. <https://doi.org/10.1051/e3sconf/202132504009>
- Yogafanny, Ekha, Triatmadja, R., Nurrochmad, F., Supraba, I., 2024. Pervious Concrete and Pervious Mortar as Water Filter in Decentralized Water Treatment– a Review. *Journal of Geoscience, Engineering, Environment, and Technology* 9, 69–76. <https://doi.org/10.25299/jgeet.2024.9.1.14236>
- Yogafanny, E., Triatmadja, R., Nurrochmad, F., Supraba, I., 2024. Leaching Potential and Effectiveness of Pervious Mortar Filters in Bacteria and Turbidity Removal from Surface Water. *International Journal of Engineering* 37, 1252–1262. <https://doi.org/10.5829/ije.2024.37.07a.05>
- Yogafanny, E., Triatmadja, R., Nurrochmad, F., Supraba, I., 2023a. Permeability Coefficient of Pervious Cement Mortar Measured by The Constant Head and Falling Head Methods. *Journal of Applied Engineering Science* 21, 1083–1093. <https://doi.org/10.5937/jaes0-44066>
- Yogafanny, E., Triatmadja, R., Nurrochmad, F., Supraba, I., 2023b. The leaching behavior of pervious mortar used as water filter in rural areas. *International Journal of GEOMATE* 25, 159–166. <https://doi.org/10.21660/2023.110.3942>
- Zamani, A., Maini, B., 2009. Flow of dispersed particles through porous media - Deep bed filtration. *J Pet Sci Eng* 69, 71–88. <https://doi.org/10.1016/j.petrol.2009.06.016>
- Zereffa, E.A., Bekalo, T.B., 2017. Clay Ceramic Filter for Water Treatment. *Materials Science and Applied Chemistry* 34, 69–74. <https://doi.org/10.1515/msac-2017-0011>
- Zhang, H., Oyanedel-Craver, V., 2013. Comparison of the bacterial removal performance of silver nanoparticles and a polymer based quaternary amine functionalized silsesquioxane coated point-of-use ceramic water filters. *J Hazard Mater* 260, 272–277. <https://doi.org/10.1016/j.jhazmat.2013.05.025>
- Zhang, K., Yong, F., McCarthy, D.T., Deletic, A., 2018. Predicting long term removal of heavy metals from porous pavements for stormwater treatment. *Water Res* 142, 236–245. <https://doi.org/10.1016/j.watres.2018.05.038>
- Zhang, R., Kanemaru, K., Nakazawa, T., 2015. Purification of river water quality using precast porous concrete products. *Journal of Advanced Concrete Technology* 13, 163–168. <https://doi.org/10.3151/jact.13.163>



Zhang, Y., Li, H., Abdelhady, A., Yang, J., 2020. Comparative laboratory measurement of pervious concrete permeability using constant-head and falling-head permeameter methods. *Constr Build Mater* 263, 120614. <https://doi.org/10.1016/j.conbuildmat.2020.120614>

Zhong, R., Xu, M., Vieira Netto, R., Wille, K., 2016. Influence of pore tortuosity on hydraulic conductivity of pervious concrete: Characterization and modeling. *Constr Build Mater* 125, 1158–1168. <https://doi.org/10.1016/j.conbuildmat.2016.08.060>

Zinn, C., Bailey, R., Barkley, N., Walsh, M.R., Hynes, A., Coleman, T., Savic, G., Soltis, K., Primm, S., Haque, U., 2018. How are water treatment technologies used in developing countries and which are the most effective? An implication to improve global health. *J Public Health Emerg* 2, 25–25. <https://doi.org/10.21037/jphe.2018.06.02>