Daftar Pustaka

Al-Kaissi, Z. A., & Mashkoor, O. G. (2016). Durability of Porous Asphalt Pavement. *Journal of Engineering and Sustainable Development*, *20*(4), 53–70. https://jeasd.uomustansiriyah.edu.iq/index.php/jeasd/article/view/580

Anam, S., & Pratikto, H. (2018). *PENAMBAHAN TREAD BAN BEKAS PADA UJI MARSHALL*. *2*(2), 63–72.

Arif, M. I., Putra, S., Herianto, D., & Sulistyorini, R. (2023). Karakteristik Campuran Aspal Porus Dengan Limbah Plastik Polietilena Tereftalat (PET) Sebagai Bahan Tambah Pada Aspal. *Jurnal Rekayasa Sipil Dan Desain*, *11*(1), 189–202. https://doi.org/10.23960/jrsdd.v11i1.3105

Arlia, L., Saleh, S. M., & Anggraini, R. (2018). *DENGAN SUBSTITUSI GONDORUKEM PADA ASPAL*. *1*(2004), 657–666.

Azman Masri, K., Kamil Arshad, A., & Saifullah Samsudin, M. (2016). Mechanical properties of porous asphalt with nanosilica modified binder. *Jurnal Teknologi*, *78*, 2180–3722. www.jurnalteknologi.utm.my

Bahruddin, Wiranata, A., Malik, A., Kumar, R., & Permata, D. S. (2019). Pembuatan Aspal Modifikasi Polimer Berbasis Karet Alam Tanpa dan Dengan Mastikasi. *Prosiding Seminar Nasional Hasil Litbangyasa Industri II*, *2*(2), 260–269.

Candra, P. R., Siswanto, H., & Rahardjo, B. (2021). *Karakteristik Marshall Campuran Aspal Porus dengan Penambahan Polyurethane Marshall Characteristics of Porous Asphalt Mixture with The Addition of Polyurethane*. *19*(1), 11–16.

Chavez, F., Marcobal, J., & Gallego, J. (2019). Laboratory evaluation of the mechanical properties of asphalt mixtures with rubber incorporated by the wet, dry, and semi-wet process. *Construction and Building Materials*, *205*, 164–174. https://doi.org/10.1016/j.conbuildmat.2019.01.159

Crucho, J., Picado-Santos, L., Neves, J., & Capitão, S. (2019). A review of nanomaterials' effect on mechanical performance and aging of asphalt

mixtures. In *Applied Sciences (Switzerland)* (Vol. 9, Issue 18). https://doi.org/10.3390/app9183657

Elizondo-Villarreal, N., Gandara-Martínez, E., García-Méndez, M., Gracia-Pinilla, M., Guzmán-Hernández, A. M., Castaño, V. M., & Gómez-Rodríguez, C. (2024). Synthesis and Characterization of SiO2 Nanoparticles for Application as Nanoadsorbent to Clean Wastewater. *Coatings*, *14*(7). https://doi.org/10.3390/coatings14070919

Hammes, G., & Thives, L. P. (2023). Porous Asphalt Mixture with Improved Fatigue Resistance and Stormwater Pollutant Reduction in Urban Road Pavement. *Water (Switzerland)*, *15*(16). https://doi.org/10.3390/w15162962

Labbafi, F., Alavi, M. Z., & Saadat, F. (2025). Comparative Analysis of Rubberized Asphalt and Traditional Asphalt: Performance, Economic, and Environmental Impacts in Life Cycle. *Infrastructures*, *10*(2). https://doi.org/10.3390/infrastructures10020034

Laras, H. P., Murniati, & Desriantomy. (2022). Karakteristik Marshall pada Campuran Hrs-Wc dengan Penambahan Arang Kayu Tumbuk Sebagai Bahan Pengisi (Filler). *Oktober*, *6*(1), 1–9.

Lei, J., Zheng, N., Fujing, Z., Wang, Y., & Xue, J. (2024). Influence of Aggregate Types on the Long-Term Skid Resistance of Porous Asphalt Mixture Based on the Laboratory MMLS. *Journal of Materials in Civil Engineering*, *36*(10), 1–12. https://doi.org/10.1061/jmcee7.mteng-17780

Mahir, A., & Abed, A. H. (2023). Case Studies in Construction Materials Enhancing asphalt binder performance through nano-SiO2 and nano-CaCO3 additives : Rheological and physical insights. *Case Studies in Construction Materials*, *19*(September), e02492. https://doi.org/10.1016/j.cscm.2023.e02492

Martina, N., Hasan, M. F. R., & Setiawan, Y. (2019). Pengaruh Serbuk Ban Bekas Sebagai Campuran Agregat Halus Pada Campuran Aspal Porous. *Wahana Teknik Sipil: Jurnal Pengembangan Teknik Sipil*, *24*(2), 144. https://doi.org/10.32497/wahanats.v24i2.1731

Mashaan, N. S. (2022). Rutting Performance of Nano-Silica-Modified C320 Bitumen. *Eng*, *3*(4), 635–645. https://doi.org/10.3390/eng3040043

McDaniel, R. S., Kowalski, K. J., Shah, A., Olek, J., & Bernhard, R. J. (2010). *Long Term Performance of a Porous Friction Course* (Issue FHWA/IN/JTRP-2009/22). https://doi.org/10.5703/1288284314284.This

Mebert, A. M., Baglole, C. J., Desimone, M. F., & Maysinger, D. (2017). Nanoengineered silica: Properties, applications and toxicity. *Food and Chemical Toxicology*, *109*, 753–770. https://doi.org/10.1016/j.fct.2017.05.054

Miguel, J., Crucho, L., Manuel, J., & Dias, S. (2018). *Mechanical performance of asphalt concrete modified with nanoparticles : Nanosilica , zero-valent iron and nanoclay*. *181*, 309–318. https://doi.org/10.1016/j.conbuildmat.2018.06.052

Nadya Tesalonika Sembung, Theo K. Sendow, & Steve Palenewen. (2020). Analisa Campuran Aspal Porus Menggunakan Material Dari Kakaskasen Kecamatan Tomohon Utara Kota Tomohon. *Jurnal Sipil Statik*, *8*(3), 345–352.

Pohan, S. A. (2019). Pengaruh Penambahan Abu Arang Kayu pada Aspal Porus terhadap Perkerasan Jalan. *Teknik Sipil*, *2*(1).

Preethi, S., & Ravichandran, P. T. (2025). Nano-silica enhanced recycled asphalt mixtures: a sustainable approach to pavement performance optimization. *Discover Civil Engineering*, *2*(1). https://doi.org/10.1007/s44290-025-00280-2

QASIM, Z. I., AL-SAHAF, N. A., & AL-JAMEEL, H. A. (2022). Effectiveness of Micro- and Nano-Silica As Modifiers in Asphalt Concrete Mixture. *Journal of Engineering Science and Technology*, *17*(2), 820–838.

Rahim Jamian. (2013). Jurnal Teknologi Full paper. *Jurnal Teknologi*, *1*, 17–28.

Rasheed, S. S., Joni, H. H., & Al-Rubaee, R. H. (2022). Using nano silica to enhance the performance of recycled asphalt mixtures. *Periodicals of Engineering and Natural Sciences*, *10*(4), 32–39. https://doi.org/10.21533/pen.v10i4.3126

Resentia, N. K., Subagio, B. S., Hariyadi, E. S., & Pradoto, R. G. K. (2023).

Pengaruh penambahan nano silika terhadap volumetrik dengan metode pemadatan marshall dan superpave pada campuran beraspal Ac - Wc. *Jurnal Teknik Sipil ITB*, *30*(1), 71–78. https://doi.org/10.5614/jts.2023.30.1.9

Saleh, S. M., Anggraini, R., & Aquina, H. (2014). Karakteristik Campuran Aspal Porus dengan Substitusi Styrofoam pada Aspal Penetrasi 60/70. *Jurnal Teknik Sipil*, *21*(3), 241. https://doi.org/10.5614/jts.2014.21.3.7

Saputra, Y., Wiana, A., Zahara, L., & Alif, M. (2023). *Karakteristik Aspal Porus dengan Campuran Serat Bemban (Donax Canniformis) Terhadap Porositas , Void In Mixture , dan Marshall Quotient*. *7*(September 2022), 20–25. https://doi.org/10.35472/jsat.v7i1.1086

Sudaryatie, S., Yulianto, W. W. E., Subagio, H., & Prasetyo, D. (2022). The Importance of Local Wisdom in Higher Education as a Philosophy of Strengthening the Character of State Defense. *Ideas: Jurnal Pendidikan, Sosial, Dan Budaya*, *8*(3), 707. https://doi.org/10.32884/ideas.v8i3.776

Sukhija, M., Saboo, N., Yadav, A. K., & Rath, C. (2021). Laboratory study on the suitability of nano-silica as a modifier for asphalt binders. *Construction and Building Materials*, *302*(August), 124406. https://doi.org/10.1016/j.conbuildmat.2021.124406

Suryatama, N., Putra, S., Herianto, D., & Sulistyorini, R. (2023). Karakteristik Campuran Aspal Porus Dengan Menggunakan Material Dari Lampung. *Jurnal Rekayasa Sipil Dan Desain*, *11*(2), 341–350. https://doi.org/10.23960/jrsdd.v11i2.3270

Taher, Z. K., & Ismael, M. Q. (2023). Rutting Prediction of Hot Mix Asphalt Mixtures Modified by Nano Silica and Subjected to Aging Process. *Civil Engineering Journal (Iran)*, *9*(Special Issue), 1–14. https://doi.org/10.28991/CEJ-SP2023-09-01

Xie, L., Rielly, C. D., Eagles, W., & Özcan-Taşkin, G. (2007). Dispersion of nano-particle clusters using mixed flow and high shear impellers in stirred tanks. *Chemical Engineering Research and Design*, *85*(5 A), 676–684. https://doi.org/10.1205/cherd06195

Yao, H., You, Z., Li, L., Lee, C. H., Wingard, D., Yap, Y. K., Shi, X., & Goh, S. W. (2013). Rheological Properties and Chemical Bonding of Asphalt Modified with Nanosilica. *Journal of Materials in Civil Engineering*, *25*(11), 1619–1630. https://doi.org/10.1061/(asce)mt.1943-5533.0000690

Zanoni, L., Boysen, A., Carlson, M., & Harris, J. (2019). *The Benefits of Using Porous Asphalt Pavement in Comparison with Other Forms of Pervious Pavements*. 0–25.