

DAFTAR PUSTAKA

- Abdulfatai Adinoyi Murana, Yakubu Musa, A. T. O. (2020). Use of Carbide Waste as Mineral Filler in Hot Mix Asphalt. *Science Technology and Education*, 8(2), 108–120.
- Abdullah, Z. Z., Wesli, W., & Akbar, S. J. (2017). Penggunaan Abu Batu Bara Sebagai Filler Pada Campuran Aspal Beton Ac-Bc. *Teras Jurnal: Jurnal Teknik Sipil*, 6(2), 121. <https://doi.org/10.29103/tj.v6i2.95>
- Abo-Qudais, S., & Suleiman, A. (2005). Monitoring fatigue damage and crack healing by ultrasound wave velocity. *Nondestructive Testing and Evaluation*, 20(2), 125–145. <https://doi.org/10.1080/10589750500206774>
- Ahmad, A., Ahmad, W., Aslam, F., & Joyklad, P. (2022). Compressive strength prediction of fly ash-based geopolymer concrete via advanced machine learning techniques. *Case Studies in Construction Materials*, 16(August 2021), e00840. <https://doi.org/10.1016/j.cscm.2021.e00840>
- Ahmadinia, E., Zargar, M., Karim, M. R., Abdelaziz, M., & Shafigh, P. (2011). Using waste plastic bottles as additive for stone mastic asphalt. *Materials and Design*, 32(10), 4844–4849. <https://doi.org/10.1016/j.matdes.2011.06.016>
- Ahmedzade, P., & Yilmaz, M. (2008). Effect of polyester resin additive on the properties of asphalt binders and mixtures. *Construction and Building Materials*, 22(4), 481–486. <https://doi.org/10.1016/j.conbuildmat.2006.11.015>
- Akbulut, H., Güreş, C., Çetin, S., & Elmaci, A. (2012). Investigation of using granite sludge as filler in bituminous hot mixtures. *Construction and Building Materials*, 36(November), 430–436. <https://doi.org/10.1016/j.conbuildmat.2012.04.069>
- Al-Alwan, A. A. K., Al-Bazoon, M., I. Mussa, F., Alalwan, H. A., Hatem Shadhar, M., Mohammed, M. M., & Mohammed, M. F. (2022). The impact of using rice husk ash as a replacement material in concrete: An experimental study. *Journal of King Saud University - Engineering Sciences*, 36(4), 249–255. <https://doi.org/10.1016/j.jksues.2022.03.002>
- Al-Shamsi, K., Hassan, H. F., & Mohammed, L. N. (2017). Effect of low VMA in hot mix asphalt on load-related cracking resistance. *Construction and Building Materials*, 149, 386–394. <https://doi.org/10.1016/j.conbuildmat.2017.05.120>
- Aprianti S, E. (2017). A huge number of artificial waste material can be supplementary cementitious material (SCM) for concrete production – a review part II. In *Journal of Cleaner Production* (Vol. 142). Elsevier Ltd. <https://doi.org/10.1016/j.jclepro.2015.12.115>
- Arabani, M., Kheiry, P. T., & Ferdowsi, B. (2012). Use of ultrasonic pulse velocity (UPV) for assessment of HMA mixtures behavior. *Iranian Journal of Science and Technology - Transactions of Civil Engineering*, 36(C1), 111–114.
- Arabani, M., & Tahami, S. A. (2017). Assessment of mechanical properties of rice husk ash modified asphalt mixture. *Construction and Building Materials*, 149, 350–358. <https://doi.org/10.1016/j.conbuildmat.2017.05.127>
- Arabani, M., Tahami, S. A., & Taghipoor, M. (2017). Laboratory investigation of hot

- mix asphalt containing waste materials. *Road Materials and Pavement Design*, 18(3), 713–729. <https://doi.org/10.1080/14680629.2016.1189349>
- Asphalt Institute. (n.d.). *The Asphalt Handbook.pdf* (7th ed.). Asphalt Institute.
- ASTM C 136-06, I. (2012). *Metode uji untuk analisis saringan agregat halus dan agregat kasar (ASTM C 136-06 , IDT)*.
- ASTM C597-02. (2003). Standard test Method For Pulse Velocity Through Concrete. *United States: American Society for Testing and Material.*, 04(02), 3–6.
- ASTM D-1559. (1976). Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus. In *Annual Book of ASTM Standards* (pp. 1–5).
- ASTM D1559-89. (1990). Standard Test Method for Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus. *United States: American Society for Testing and Material.*, 7–9.
- Billigiri, K. P., & Kaloush, K. E. (2009). Prediction of pavement materials' impedance using ultrasonic pulse velocity. *Road Materials and Pavement Design*, 10(4), 767–787. <https://doi.org/10.1080/14680629.2009.9690226>
- Billigiri, K. P., & Way, G. B. (2014). Noise-damping characteristics of different pavement surface wearing courses. *Road Materials and Pavement Design*, 15(4), 925–941. <https://doi.org/10.1080/14680629.2014.902768>
- Buckner, C. A., Lafrenie, R. M., Dénommée, J. A., Caswell, J. M., Want, D. A., Gan, G. G., Leong, Y. C., Bee, P. C., Chin, E., Teh, A. K. H., Picco, S., Villegas, L., Tonelli, F., Merlo, M., Rigau, J., Diaz, D., Masuelli, M., Korrapati, S., Kurra, P., ... Mathijssen, R. H. J. (2016). We are IntechOpen , the world ' s leading publisher of Open Access books Built by scientists , for scientists TOP 1 % . *Intech*, 11(tourism), 13.
- Challenge, L. B. (2019). Life Cycle Assessment of Asphalt Binder. *Asphalt Institute*, 1–5.
- Chen, C., Habert, G., Bouzidi, Y., Jullien, A., & Ventura, A. (2010). LCA allocation procedure used as an incitative method for waste recycling: An application to mineral additions in concrete. *Resources, Conservation and Recycling*, 54(12), 1231–1240. <https://doi.org/10.1016/j.resconrec.2010.04.001>
- Chen, G., Yu, B., & Nielsen, P. (2019). Preface: operations research for transportation. *Annals of Operations Research*, 273(1–2), 1–3. <https://doi.org/10.1007/s10479-018-3113-7>
- Choudhary, J., Kumar, B., & Gupta, A. (2020). Feasible utilization of waste limestone sludge as filler in bituminous concrete. *Construction and Building Materials*, 239, 117781. <https://doi.org/10.1016/j.conbuildmat.2019.117781>
- Dong, M., Sun, W., Li, L., & Gao, Y. (2020). Effect of asphalt film thickness on shear mechanical properties of asphalt-aggregate interface. *Construction and Building Materials*, 263, 120208. <https://doi.org/10.1016/j.conbuildmat.2020.120208>
- Fadholah, R., & Setyawan, A. (2017). *Konsumsi energi dan emisi gas rumah kaca (co 2) pada proses pelaksanaan pekerjaan perkerasan jalan*. 36, 326–334.
- González, A., Norambuena-Contreras, J., Storey, L., & Schlangen, E. (2018). Effect

- of RAP and fibers addition on asphalt mixtures with self-healing properties gained by microwave radiation heating. *Construction and Building Materials*, 159, 164–174. <https://doi.org/10.1016/j.conbuildmat.2017.10.070>
- Henry, M., Pardo, G., Nishimura, T., & Kato, Y. (2011). Balancing durability and environmental impact in concrete combining low-grade recycled aggregates and mineral admixtures. *Resources, Conservation and Recycling*, 55(11), 1060–1069. <https://doi.org/10.1016/j.resconrec.2011.05.020>
- Inyim, P., Pereyra, J., Bienvenu, M., & Mostafavi, A. (2016). Environmental assessment of pavement infrastructure: A systematic review. *Journal of Environmental Management*, 176, 128–138. <https://doi.org/10.1016/j.jenvman.2016.03.042>
- Irfansyah, P. A., Setyawan, A., & Djumari. (2017). Karakteristik Marshall Pada Campuran Aspal Beton Menggunakan Daspal Sebagai Bahan Pengikat. *E-Jurnal Matriks Teknik Sipil*, 2(9), 947–958.
- Jiang, Z. Y., Ponniah, J., & Cascante, G. (2006). Improved ultrasonic pulse velocity technique for bituminous material characterization. *TAC/ATC 2006 - 2006 Annual Conference and Exhibition of the Transportation Association of Canada: Transportation Without Boundaries, April*.
- Jitsangiam, P., Chindaprasirt, P., & Nikraz, H. (2013). An evaluation of the suitability of SUPERPAVE and Marshall asphalt mix designs as they relate to Thailand's climatic conditions. *Construction and Building Materials*, 40, 961–970. <https://doi.org/10.1016/j.conbuildmat.2012.11.011>
- Kandhal, P. S., Lynn, C. Y., & Parker, F. (1998). Characterization tests for mineral fillers related to performance of asphalt paving mixtures. *Transportation Research Record*, 1638, 101–110. <https://doi.org/10.3141/1638-12>
- Kazemi, M., Madandoust, R., & de Brito, J. (2019). Compressive strength assessment of recycled aggregate concrete using Schmidt rebound hammer and core testing. *Construction and Building Materials*, 224, 630–638. <https://doi.org/10.1016/j.conbuildmat.2019.07.110>
- Kurda, R., Silvestre, J. D., & de Brito, J. (2018). Toxicity and environmental and economic performance of fly ash and recycled concrete aggregates use in concrete: A review. *Heliyon*, 4, 611. <https://doi.org/10.1016/j.heliyon.2018>
- Lavin Patrick. (2015). *Asphalt Pavement*, Taylor & Francis e-Library, London and New York.
- Lestari, I. G. A. A. I. (2013). Perbandingan Perkerasan Kaku dan Perkerasan Lentur. *Jurnal Transportasi*, 7(1), 128–134.
- Majhi, R. K., Padhy, A., & Nayak, A. N. (2021). Performance of structural lightweight concrete produced by utilizing high volume of fly ash cenosphere and sintered fly ash aggregate with silica fume. *Cleaner Engineering and Technology*, 3. <https://doi.org/10.1016/j.clet.2021.100121>
- Mistry, R., Karmakar, S., & Kumar Roy, T. (2019). Experimental evaluation of rice husk ash and fly ash as alternative fillers in hot-mix asphalt. *Road Materials and Pavement Design*, 20(4), 979–990. <https://doi.org/10.1080/14680629.2017.1422791>

- Mistry, R., & Kumar Roy, T. (2021). Performance evaluation of bituminous mix and mastic containing rice husk ash and fly ash as filler. *Construction and Building Materials*, 268(xxxx), 121187. <https://doi.org/10.1016/j.conbuildmat.2020.121187>
- NAPA-QIP122. (2002). Designing and Constructing SMA Mixtures - State-of-the-Practice. *National Asphalt Pavement Association, QIS 122*.
- Omer, S. A., Demirboga, R., & Khushefati, W. H. (2015). Relationship between compressive strength and UPV of GGBFS based geopolymer mortars exposed to elevated temperatures. *Construction and Building Materials*, 94, 189–195. <https://doi.org/10.1016/j.conbuildmat.2015.07.006>
- Ozturk, E., Ince, C., Derogar, S., & Ball, R. (2022). Factors affecting the CO2 emissions, cost efficiency and eco-strength efficiency of concrete containing rice husk ash: A database study. *Construction and Building Materials*, 326(November 2021), 126905. <https://doi.org/10.1016/j.conbuildmat.2022.126905>
- Paul, D., Suresh, M., & Pal, M. (2021). Utilization of fly ash and glass powder as fillers in steel slag asphalt mixtures. *Case Studies in Construction Materials*, 15(August), e00672. <https://doi.org/10.1016/j.cscm.2021.e00672>
- Peraturan Menteri Pekerjaan Umum.Nomor.19/PRT/M/2011. (2011). Persyaratan Teknis Jalan dan Kriteria Perencanaan Teknis Jalan. *Peraturan Menteri Pekerjaan Umum, No.19/PRT/M/2011, 11(2)*, 10–14.
- Puslitbang, R. M., Ekonomi, S., Lingkungan, D., Kementerian, B., & Umum, P. (1997). *PERBANDINGAN EMISI CO 2 MENGGUNAKAN BETON DAN ASPAL (STUDI KASUS REKONSTRUKSI JALAN NASIONAL PROVINSI RIAU) Comparison CO 2 Emission Using Concrete and Asphalt (Case Study of National Road Reconstruction in Riau Province)*. 209–220.
- Quispe, I., Navia, R., & Kahhat, R. (2019). Life Cycle Assessment of rice husk as an energy source. A Peruvian case study. *Journal of Cleaner Production*, 209, 1235–1244. <https://doi.org/10.1016/j.jclepro.2018.10.312>
- Rashed, A. M., & Al-Hadidy, A. I. (2023). Comparative performance of DG mixes and SMA mixes with waste crumb rubber as aggregate replacement. *Case Studies in Construction Materials*, 19(July), e02615. <https://doi.org/10.1016/j.cscm.2023.e02615>
- Revilla-Cuesta, V., Skaf, M., Serrano-López, R., & Ortega-López, V. (2021). Models for compressive strength estimation through non-destructive testing of highly self-compacting concrete containing recycled concrete aggregate and slag-based binder. *Construction and Building Materials*, 280. <https://doi.org/10.1016/j.conbuildmat.2021.122454>
- Saleh, S. M., & Isya, M. (2017). *THE EFFECT OF POLYSTYRENE (PS) SUBSTITUTION AND COCONUT CHARCOAL POWDER AS FILLER. X(X)*, 1–10.
- Sargin, Ş., Saltan, M., Morova, N., Serin, S., & Terzi, S. (2013). Evaluation of rice husk ash as filler in hot mix asphalt concrete. *Construction and Building Materials*, 48, 390–397. <https://doi.org/10.1016/j.conbuildmat.2013.06.029>

- Sengoz, B., & Topal, A. (2007). Minimum voids in mineral aggregate in hot-mix asphalt based on asphalt film thickness. *Building and Environment*, 42(10), 3629–3635. <https://doi.org/10.1016/j.buildenv.2006.10.005>
- Sentosa, L., & Roza, A. A. (2012). Analisis Dampak Beban Overloading Kendaraan pada Struktur Rigid Pavement Terhadap Umur Rencana Perkerasan (Studi Kasus Ruas Jalan Simp Lago – Sorek Km 77 S/D 78). *Jurnal Teknik Sipil*, 19(2), 161. <https://doi.org/10.5614/jts.2012.19.2.7>
- Shah, S. A. R., Anwar, M. K., Arshad, H., Qurashi, M. A., Nisar, A., Khan, A. N., & Waseem, M. (2020). Marshall stability and flow analysis of asphalt concrete under progressive temperature conditions: An application of advance decision-making approach. *Construction and Building Materials*, 262, 120756. <https://doi.org/10.1016/j.conbuildmat.2020.120756>
- Silva, L. S., Amario, M., Stolz, C. M., Figueiredo, K. V., & Haddad, A. N. (2023). A Comprehensive Review of Stone Dust in Concrete: Mechanical Behavior, Durability, and Environmental Performance. *Buildings*, 13(7). <https://doi.org/10.3390/buildings13071856>
- Singh, A., Biligiri, K. P., & Sampath, P. V. (2023). Quantification of Effective Flow Resistivity for Parametric Assessment of Pervious Concrete by Using Ultrasonic Pulse Velocity Method. *Transportation Research Record*, 2677(10), 64–78. <https://doi.org/10.1177/03611981231160175>
- Singh, A. K., & Sahoo, J. P. (2021). Rutting prediction models for flexible pavement structures: A review of historical and recent developments. *Journal of Traffic and Transportation Engineering (English Edition)*, 8(3), 315–338. <https://doi.org/10.1016/j.jtte.2021.04.003>
- Slebi-Acevedo, C. J., Lastra-González, P., Indacochea-Vega, I., & Castro-Fresno, D. (2020). Laboratory assessment of porous asphalt mixtures reinforced with synthetic fibers. *Construction and Building Materials*, 234, 117224. <https://doi.org/10.1016/j.conbuildmat.2019.117224>
- SNI 03-1968. (1990). Metode Pengujian Analisis Saringan Agregat Halus dan Kasar. In *Badan Standardisasi Indonesia*.
- SNI 06-2489. (1991). Metode Pengujian Campuran Aspal dengan Alat Marshall. *Badan Standardisasi Nasional*, 1, 7.
- SNI 06-6723-2002. (n.d.). *Spesifikasi Bahan Pengisi Untuk Campuran Beraspal*.
- SNI 1969:2016. (2016). Metode Uji Berat Jenis dan Penyerapan Air Agregat Kasar. *Badan Standar Nasional Indonesia*, 20.
- SNI 1969. (2008). Cara Uji Berat Jenis dan Penyerapan Agregat Kasar. In *Badan Standardisasi Nasional*.
- SNI 1970. (2008). Cara Uji Berat Jenis dan Penyerapan Air Agregat Halus. *Badan Standar Nasional Indonesia*, 7–18.
- SNI 2432. (2011). SNI 2432:2011 Cara uji Daktilitas Aspal. *Badan Standardisasi Nasional*, 1–15.
- SNI 2433. (2011). SNI 2433: 2011 Cara Uji Titik Nyala Dan Titik Bakar Aspal Dengan Alat Cleveland Open Up. *Badan Standardisasi Nasional*, 1–18.
- SNI 2434. (2011). SNI 2434:2011 Cara Uji Titik Lembek Aspal. *Badan*

- Standardisasi Nasional* (2011).
- SNI 2441. (2011). Cara uji berat jenis aspal keras, SNI 2441:2011. *Badan Standardisasi Nasional*.
- SNI 2456. (2011). " Standar Nasional Indonesia Cara uji penetrasi aspal. *Badan Standardisasi Nasional*.
- SNI 2489:2018. (2018). Metode Uji Stabilitas dan Pelelehan Campuran Beraspal Panas dengan Menggunakan Alat Marshall. *Badan Standardisasi Indonesia*.
- SNI ASTM C136. (2012). SNI ASTM C136:2012. Metode uji untuk analisis saringan agregat halus dan agregat kasar. *Badan Standardisasi Nasional*, 1–24.
- Spesifikasi Umum Bina Marga 2010 (Revisi 3). (2010). Spesifikasi Umum 2010 (Revisi 3). In *Spesifikasi Umum 2010 (Revisi 3): Vol. Divisi 6* (Issue Campuran Beraspal Panas, pp. 6–43).
- Spesifikasi Umum Bina Marga 2018 (Revisi 2). (2020). Spesifikasi Umum Bina Marga 2018 Untuk Pekerjaan Konstruksi Jalan dan Jembatan (Revisi 2). *Ministry of Public Works and Housing*, Oktober, 1036.
- St. Fauziah Badaron, D. (2019). Studi Perbandingan Kuat Tarik Tidak Langsung Terhadap campuran Aspal Beton Dengan Menggunakan Limbah Marmer dan Abu Sekam Padi Sebagai Filler. *Jurnal Ilmiah Ilmu - Ilmu Teknik*, Vol.4, No., 144–153.
- Tan, E. H., Zahran, E. M. M., & Tan, S. J. (2022). The optimal use of crumb rubber in hot-mix asphalt by dry process: A laboratory investigation using Marshall mix design. *Transportation Engineering*, 10(October), 100145. <https://doi.org/10.1016/j.treng.2022.100145>
- Thives, L. P., & Ghisi, E. (2017). Asphalt mixtures emission and energy consumption: A review. *Renewable and Sustainable Energy Reviews*, 72(September 2016), 473–484. <https://doi.org/10.1016/j.rser.2017.01.087>
- Tosti, F., Bianchini Ciampoli, L., D'Amico, F., Alani, A. M., & Benedetto, A. (2018). An experimental-based model for the assessment of the mechanical properties of road pavements using ground-penetrating radar. *Construction and Building Materials*, 165, 966–974. <https://doi.org/10.1016/j.conbuildmat.2018.01.179>
- Usman, A., Sutanto, M. H., Napiah, M., Zoorob, S. E., Khan, M. I., & Ibrahim, M. B. (2020). Application of gamma irradiation on Polyethylene Terephthalate (PET) for use in asphaltic concrete mixtures as aggregates replacement. *IOP Conference Series: Earth and Environmental Science*, 498(1). <https://doi.org/10.1088/1755-1315/498/1/012008>
- Vasanelli, E., Colangiuli, D., Calia, A., Sileo, M., & Aiello, M. A. (2015). Ultrasonic pulse velocity for the evaluation of physical and mechanical properties of a highly porous building limestone. *Ultrasonics*, 60, 33–40. <https://doi.org/10.1016/j.ultras.2015.02.010>
- Walach, D., Dybel, P., Sagan, J., & Gicala, M. (2019). Environmental performance of ordinary and new generation concrete structures—a comparative analysis. *Environmental Science and Pollution Research*, 26(4), 3980–3990. <https://doi.org/10.1007/s11356-018-3804-2>

- Yaro, N. S. A., Napiah, M., Sutanto, M. H., Usman, A., Rafindadi, A. D., Saeed, S. M., & Abdulrahman, S. (2021). Evaluation of the Impact of Short-Term Aging on Volumetric and Marshall Properties of Palm Oil Clinker Fine Modified Asphalt Concrete (POCF-MAC). *Journal of Physics: Conference Series*, 1793(1). <https://doi.org/10.1088/1742-6596/1793/1/012054>
- Yaro, N. S. A., Sutanto, M. H., Habib, N. Z., Napiah, M., Usman, A., Al-Sabaei, A. M., & Rafiq, W. (2024). Mixture Design-Based Performance Optimization via Response Surface Methodology and Moisture Durability Study for Palm Oil Clinker Fine Modified Bitumen Asphalt Mixtures. *International Journal of Pavement Research and Technology*, 17(1), 123–150. <https://doi.org/10.1007/s42947-022-00224-4>
- Zvonarić, M., Barišić, I., & Dokšanović, T. (2024). Effect of rubber granules and rubber threads on mechanical properties of cement-bound base course. *Construction and Building Materials*, 437(March). <https://doi.org/10.1016/j.conbuildmat.2024.137094>

L A M P I R A N

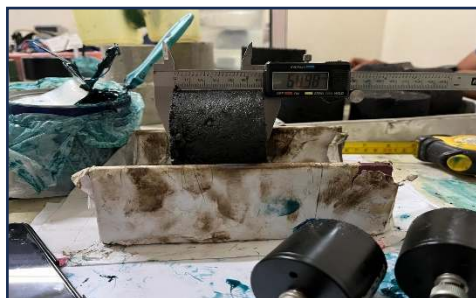
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LAMPIRAN 1
PERSIAPAN BAHAN DAN UJI KARAKTERISTIK



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LAMPIRAN 1
PENCAMPURAN MATERIAL, ASPAL, SSD DAN PENGUJIAN UPV



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LAMPIRAN 2
PROSES SSD DAN PERENDAMAN WATERBATH



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LAMPIRAN 3 PENGUJIAN MARSHALL

