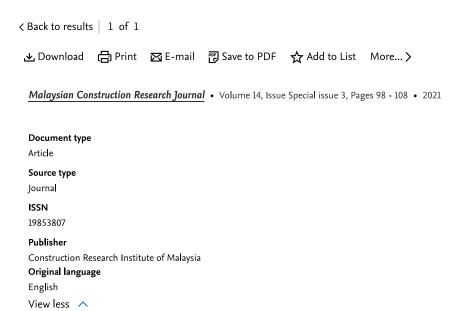


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Physical and mechanical evaluation of porous asphalt incorporated with untreated and treated waste cooking oil

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Abstract

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Abstract

The vast amount of waste cooking oil (WCO) has invited odds effects on the environment when disposed of improperly. Incorporating waste materials into asphalt mixture is common practice

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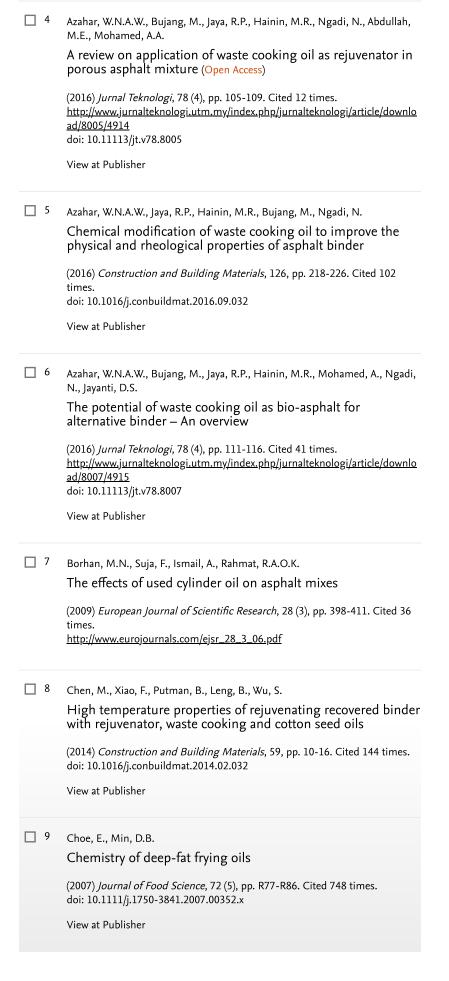
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these days as it minimizes the amount of waste material as well as improves the performance of the mixture. WCO is known for its natural fluidity characteristics, wherein affecting good cracking performance at low temperature, yet indicate poor rutting resistance at high temperature. Plus, less strength in porous asphalt has worsened the rutting condition. Hence, pretreatment of WCO is suggested before the modification was done. In this study, WCO is being treated with chemical treatment of the transesterification process. Then, the modified binder of 5%, 10%, 15% and 20% untreated and treated WCO were tested with physical testing of penetration and softening point temperature. Later, a similar percentage of untreated and treated WCO were incorporated into porous asphalt mixture to analyze the mechanical performance of Marshall Stability, Flow and Stiffness. The result of porous asphalt mixture with 10% treated WCO showed an improvement in Marshall Stability, Flow and Stiffness. It can be concluded, samples with treated WCO indicated remarkable performance in terms of physical and mechanical evaluation, owing to similar polarity which enhances good interaction bonding that strengthens the asphalt mixture. © 2021, Construction

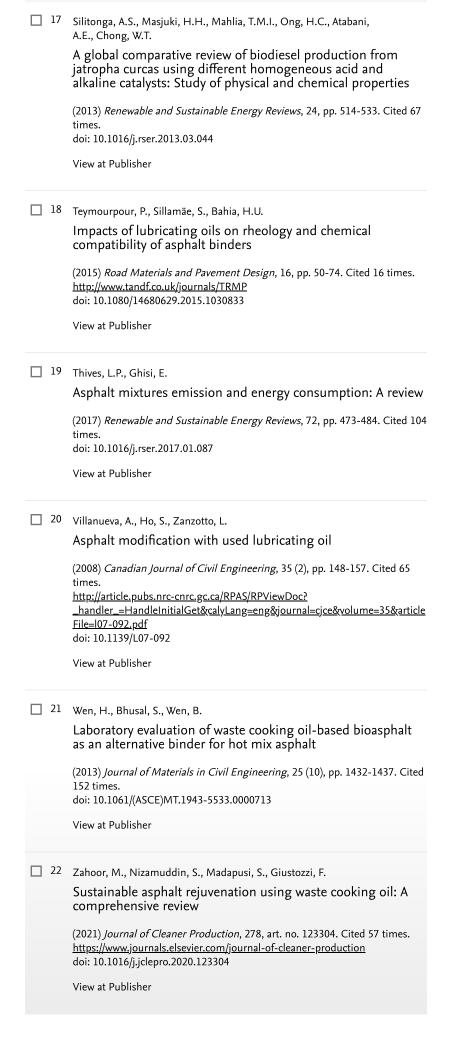
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| | ☐ 1 Abed, Y.H., Abedali Al-Haddad, A.H. Temperature Susceptibility of Modified Asphalt Binders (Open Access) (2020) IOP Conference Series: Materials Science and Engineering, 671 (1), ar no. 012121. Cited 6 times. https://iopscience.iop.org/journal/1757-899X doi: 10.1088/1757-899X/671/1/012121 View at Publisher |
| | Abustan, I., Hamzah, M. O., Rashid, M. A. Review of permeable pavement systems in Malaysia conditions (2012) OIDA International Journal of Sustainable Development, 4, pp. 27-36. Cited 13 times. (02) |
| | Ahmad, K.A., Abdullah, M.E., Hassan, N.A., Daura, H.A., Ambak, K. A review of using porous asphalt pavement as an alternative to conventional pavement in stormwater treatment (2017) World Journal of Engineering, 14 (5), pp. 355-362. Cited 12 times. http://www.emeraldinsight.com/journal/wje doi: 10.1108/WJE-09-2016-0071 |

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| Contreras-Andrade, I., Parra-Santiago, J., Sodre, J. R., Pathiyamattom, J., Guerrero-Fajardo, C. A. Transesterification reaction of waste cooking oil and chicken fat by homogeneous catalysis (2014) <i>Journal of Chemistry and Chemical Engineering</i> , 8, pp. 736-743. Cited 10 times. |
|--|
| Drake, J., Bradford, A., Van Seters, T. Stormwater quality of spring-summer-fall effluent from three partial-infiltration permeable pavement systems and conventional asphalt pavement (2014) Journal of Environmental Management, 139, pp. 69-79. Cited 98 times. http://www.elsevier.com/inca/publications/store/6/2/2/8/7/1/index.htt doi: 10.1016/j.jenvman.2013.11.056 View at Publisher |
| Mohd Hasan, M.R., Chew, JW., Jamshidi, A., Yang, X., Hamzah, M.O. Review of sustainability, pretreatment, and engineering considerations of asphalt modifiers from the industrial solid wastes (Open Access) (2019) Journal of Traffic and Transportation Engineering (English Edition), 6 (3), pp. 209-244. Cited 28 times. http://www.journals.elsevier.com/journal-of-traffic-and-transportation-engineering-english-edition doi: 10.1016/j.jtte.2018.08.001 View at Publisher |
| Raya, Jabatan Kerja (2008) <i>Standard Specification for Road Works</i> , pp. 43-57. Cited 188 times. Section 4: Flexible pavement |
| Putra Jaya, R., Masri, K.A., Awang, H., Ali, M.I., Ramli, N.I., Wan Azahar, W.N.A., Shaffie, E., (), Ramli, I. Stability and stiffness of asphaltic concrete incorporating waste cooking oil (2019) International Journal of Recent Technology and Engineering, 7 (6), pp. 16-19. Cited 10 times. https://www.ijrte.org/wp-content/uploads/papers/v7i6/E2054017519.pdf |
| Liley, C. (2018) <i>Rutting: Causes, Prevention, and Repairs</i> , pp. 1-7. Cited 3 times. Chicago: Illinois Asphalt Pavement Association |
| Petersen, J.Claine QUANTITATIVE FUNCTIONAL GROUP ANALYSIS OF ASPHALTS USING DIFFERENTIAL INFRARED SPECTROMETRY AND SELECTIVE CHEMICAL REACTIONS - THEORY AND APPLICATION. (1986) Transportation Research Record, pp. 1-11. Cited 104 times. |
| |



| | | pavement materials and construction (2005) Journal of Infrastructure Systems, 11 (1), pp. 9-20. Cited 183 times. doi: 10.1061/(ASCE)1076-0342(2005)11:1(9) |
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