

REFERENCES

- [1] P. Chotickai and S. Somana, "Performance of CFRP-Strengthened Concrete Beams after Exposure to Wet/Dry Cycles," *J. Compos. Constr.*, vol. 22, no. 6, pp. 1–10, 2018, doi: 10.1061/(ASCE)CC.1943-5614.0000895.
- [2] J. Gamage, M. Wong, and R. Al-Mahaidi, "Durability of CFRP-Strengthened concrete members under extreme temperature and humidity," *Aust. J. Struct. Eng.*, vol. 9, no. 2, pp. 111–118, 2009, doi: 10.1080/13287982.2009.11465014.
- [3] B. Gao, J. K. Kim, and C. K. Y. Leung, "Experimental study on RC beams with FRP strips bonded with rubber modified resins," *Compos. Sci. Technol.*, vol. 64, no. 16, pp. 2557–2564, 2004, doi: 10.1016/j.compscitech.2004.05.016.
- [4] Y. K. Guruprasad and A. Ramaswamy, "Thermal insulation of concrete and the repair material CFRP exposed to high temperature and different time intervals," *Constr. Build. Mater.*, vol. 205, pp. 549–565, 2019, doi: 10.1016/j.conbuildmat.2019.01.236.
- [5] J. P. Firmo and J. R. Correia, "Fire behaviour of thermally insulated RC beams strengthened with NSM-CFRP strips: Experimental study," *Compos. Part B Eng.*, vol. 76, pp. 112–121, 2015, doi: 10.1016/j.compositesb.2015.02.018.
- [6] J. S. Patel, K. B. Parikh, and P. A. R. Darji, "Study on Concrete Using Fly Ash , Rise Husk Ash and Egg Shell Powder," vol. 5, no. Ii, pp. 566–570, 2017.
- [7] M. N. Musa, M. Fikhri, and A. Aziz, "Thermal Conductivity for Mixture of Rice Husk Fiber and Gypsum," vol. 819, pp. 69–73, 2016, doi: 10.4028/www.scientific.net/AMM.819.69.
- [8] J. C. P. H. Gamage, R. Al-Mahaidi, and M. B. Wong, "Bond characteristics of CFRP plated concrete members under elevated temperatures," *Compos. Struct.*, vol. 75, no. 1–4, pp. 199–205, 2006, doi: 10.1016/j.compstruct.2006.04.068.
- [9] D. Kumar, M. Alam, P. X. W. Zou, J. G. Sanjayan, and R. A. Memon, "Comparative analysis of building insulation material properties and performance," *Renew. Sustain. Energy Rev.*, vol. 131, no. June, p. 110038, 2020, doi: 10.1016/j.rser.2020.110038.

- [10] W. Food, *World Food and Agriculture*, vol. 274, no. 7102. 1959.
- [11] S. Mayooraan, S. Ragavan, and N. Sathiparan, “Comparative study on open air burnt low- and high-carbon rice husk ash as partial cement replacement in cement block production,” *J. Build. Eng.*, vol. 13, no. May, pp. 137–145, 2017, doi: 10.1016/j.jobbe.2017.07.011.
- [12] A. L.O, Ettu;M.S.W. Mbajiorgu; K.C, Nwachukwu; J.I, “Variation of Strength of OPC-Rice Husk Ash Cement Composites with Water- Cement Ratio *1 ,3,4 2,” vol. 2, no. 7, 2013.
- [13] B. H. Abu Bakar, P. J. Ramadhansyah, and M. J. Megat Azmi, “Effect of rice husk ash fineness on the chemical and physical properties of concrete,” *Mag. Concr. Res.*, vol. 63, no. 5, pp. 313–320, 2011, doi: 10.1680/mac.10.00019.
- [14] S. K. Antiohos, V. G. Papadakis, and S. Tsimas, “Cement and Concrete Research Rice husk ash (RHA) effectiveness in cement and concrete as a function of reactive silica and fi neness,” *Cem. Concr. Res.*, vol. 61–62, pp. 20–27, 2014, doi: 10.1016/j.cemconres.2014.04.001.
- [15] S. K. Antiohos, V. G. Papadakis, and S. Tsimas, “Rice husk ash (RHA) effectiveness in cement and concrete as a function of reactive silica and fineness,” *Cem. Concr. Res.*, vol. 61–62, pp. 20–27, 2014, doi: 10.1016/j.cemconres.2014.04.001.
- [16] E. Mohseni, M. J. Kazemi, M. Koushkbaghi, B. Zehtab, and B. Behforouz, “Evaluation of mechanical and durability properties of fiber-reinforced lightweight geopolymer composites based on rice husk ash and nano-alumina,” *Constr. Build. Mater.*, vol. 209, pp. 532–540, 2019, doi: 10.1016/j.conbuildmat.2019.03.067.
- [17] M. Jamil, M. N. N. Khan, M. R. Karim, A. B. M. A. Kaish, and M. F. M. Zain, “Physical and chemical contributions of Rice Husk Ash on the properties of mortar,” *Constr. Build. Mater.*, vol. 128, pp. 185–198, 2016, doi: 10.1016/j.conbuildmat.2016.10.029.

- [18] E. Vasconcelos, S. Fernandes, J. L. Barroso De Aguiar, and F. Pacheco-Torgal, “Concrete retrofitting using metakaolin geopolymer mortars and CFRP,” *Constr. Build. Mater.*, vol. 25, no. 8, pp. 3213–3221, 2011, doi: 10.1016/j.conbuildmat.2011.03.006.
- [19] M. R. F. Gonc and C. P. Bergmann, “Thermal insulators made with rice husk ashes : Production and correlation between properties and microstructure,” vol. 21, pp. 2059–2065, 2007, doi: 10.1016/j.conbuildmat.2006.05.057.
- [20] R. Pode, “Potential applications of rice husk ash waste from rice husk biomass power plant,” *Renew. Sustain. Energy Rev.*, vol. 53, pp. 1468–1485, 2016, doi: 10.1016/j.rser.2015.09.051.
- [21] M. F. M. Zain, M. N. Islam, F. Mahmud, and M. Jamil, “Production of rice husk ash for use in concrete as a supplementary cementitious material,” *Constr. Build. Mater.*, vol. 25, no. 2, pp. 798–805, 2011, doi: 10.1016/j.conbuildmat.2010.07.003.
- [22] Y. Y. Kim, B. J. Lee, V. Saraswathy, and S. J. Kwon, “Strength and durability performance of alkali-activated rice husk ash geopolymer mortar,” *Sci. World J.*, vol. 2014, 2014, doi: 10.1155/2014/209584.
- [23] R. P. Jaya *et al.*, “Strength properties of rice husk ash concrete under sodium sulphate attack,” *Int. J. Integr. Eng.*, vol. 10, no. 4, pp. 199–202, 2018.
- [24] B. Singh, *Rice husk ash*. Elsevier Ltd, 2018.
- [25] X. Liu, X. Chen, L. Yang, H. Chen, Y. Tian, and Z. Wang, “A review on recent advances in the comprehensive application of rice husk ash,” *Res. Chem. Intermed.*, vol. 42, no. 2, pp. 893–913, 2016, doi: 10.1007/s11164-015-2061-y.
- [26] H. Varshney, “Utilization of Rice Husk Ash in concrete as cement replacement,” *IOSR J. Mech. Civ. Eng.*, vol. 01, no. 01, pp. 28–33, 2016, doi: 10.9790/1684-15010010128-33.
- [27] C. L. Hwang, T. P. Huynh, and Y. Risdianto, “An application of blended fly

- ash and residual rice husk ash for producing green building bricks,” *J. Chinese Inst. Eng. Trans. Chinese Inst. Eng. A*, vol. 39, no. 7, pp. 850–858, 2016, doi: 10.1080/02533839.2016.1191376.
- [28] S. Rukzon and P. Chindaprasirt, “Physical Properties of Cement Mortar Containing Waste Ash,” *Appl. Mech. Mater.*, vol. 804, no. 325, pp. 129–132, 2015, doi: 10.4028/www.scientific.net/amm.804.129.
- [29] P. Mishra, A. Chakraverty, and H. D. Banerjee, “Studies on physical and thermal properties of rice husk related to its industrial application,” *J. Mater. Sci.*, vol. 21, no. 6, pp. 2129–2132, 1986, doi: 10.1007/BF00547958.
- [30] S. Verma and M. Kumar, “Behaviour of fly ash and rice husk ash based geopolymer concrete,” *Key Eng. Mater.*, vol. 775 KEM, pp. 596–602, 2018, doi: 10.4028/www.scientific.net/KEM.775.596.
- [31] M. M. Ahmad, F. Ahmad, M. Azmi, and M. Z. A. Mohd Zahid, “Properties of Cement Mortar Consisting Raw Rice Husk,” *Appl. Mech. Mater.*, vol. 802, pp. 267–271, 2015, doi: 10.4028/www.scientific.net/amm.802.267.
- [32] G. G.S. and M. S. N., “Effect of PFA on Strength and Water Absorption of Mortar,” *J. Civ. Eng. Sci. Technol.*, vol. 2, no. 1, pp. 7–11, 2011, doi: 10.33736/jcest.81.2011.
- [33] M. Jamil, A. B. M. A. M. A. Kaish, S. N. Raman, and M. F. M. M. Zain, “Pozzolanic contribution of rice husk ash in cementitious system,” *Constr. Build. Mater.*, vol. 47, no. May, pp. 588–593, 2013, doi: 10.1016/j.conbuildmat.2013.05.088.
- [34] T. International and J. Of, “Experimental Study On Rice Husk As Fine Aggregates In Concrete,” no. 1992, pp. 9–14, 2014.
- [35] Z. Liu, Y. Ding, F. Wang, and Z. Deng, “Thermal insulation material based on SiO₂ aerogel,” *Constr. Build. Mater.*, vol. 122, pp. 548–555, 2016, doi: 10.1016/j.conbuildmat.2016.06.096.
- [36] S. Kofi, F. Kotoka, D. Mensah, and A. Kwame, “Investigation of the

- compressive strength of pit sand , and sea sand mortar prisms produced with rice husk ash as additive,” *Constr. Build. Mater.*, vol. 151, pp. 383–387, 2017, doi: 10.1016/j.conbuildmat.2017.06.082.
- [37] C. L. Hwang and T. P. Huynh, “Investigation into the use of unground rice husk ash to produce eco-friendly construction bricks,” *Constr. Build. Mater.*, vol. 93, no. 2015, pp. 335–341, 2015, doi: 10.1016/j.conbuildmat.2015.04.061.
- [38] P. Chindaprasirt and S. Rukzon, “Strength, porosity and corrosion resistance of ternary blend Portland cement, rice husk ash and fly ash mortar,” *Constr. Build. Mater.*, vol. 22, no. 8, pp. 1601–1606, 2008, doi: 10.1016/j.conbuildmat.2007.06.010.
- [39] P. Torkittikul, T. Nochaiya, and W. Wongkeo, “Utilization of coal bottom ash to improve thermal insulation of construction material,” *J. Mater. Cycles Waste Manag.*, 2015, doi: 10.1007/s10163-015-0419-2.
- [40] R. Demirbog, “Influence of mineral admixtures on thermal conductivity and compressive strength of mortar,” *Energy Build.*, vol. 35, pp. 189–192, 2003.
- [41] O. Na and Y. Xi, “Mechanical and durability properties of insulation mortar with rubber powder from waste tires,” *J. Mater. Cycles Waste Manag.*, 2016, doi: 10.1007/s10163-016-0475-2.
- [42] A. K. Saha, P. K. Sarker, and V. Golovanevskiy, “Thermal properties and residual strength after high temperature exposure of cement mortar using ferronickel slag aggregate,” *Constr. Build. Mater.*, vol. 199, pp. 601–612, 2019, doi: 10.1016/j.conbuildmat.2018.12.068.
- [43] V. Corinaldesi, A. Mazzoli, and R. Siddique, “Characterization of lightweight mortars containing wood processing by-products waste,” *Constr. Build. Mater.*, vol. 123, pp. 281–289, 2016, doi: 10.1016/j.conbuildmat.2016.07.011.
- [44] A. Ghosh, A. Ghosh, and S. Neogi, “Reuse of fl y ash and bottom ash in mortars with improved thermal conductivity performance for buildings,” *Heliyon*, no. September, p. e00934, 2018, doi: 10.1016/j.heliyon.2018.e00934.

- [45] B. Ayobami and C. Dai, "Development of banana fibers and wood bottom ash modified cement mortars," *Constr. Build. Mater.*, vol. 241, p. 118041, 2020, doi: 10.1016/j.conbuildmat.2020.118041.
- [46] N. Benmansour, B. Agoudjil, A. Gherabli, A. Kareche, and A. Boudenne, "Thermal and mechanical performance of natural mortar reinforced with date palm fibers for use as insulating materials in building," *Energy Build.*, vol. 81, pp. 98–104, 2014, doi: 10.1016/j.enbuild.2014.05.032.
- [47] M. G. Gomes, I. Flores-Colen, F. da Silva, and M. Pedroso, "Thermal conductivity measurement of thermal insulating mortars with EPS and silica aerogel by steady-state and transient methods," *Constr. Build. Mater.*, vol. 172, pp. 696–705, 2018, doi: 10.1016/j.conbuildmat.2018.03.162.
- [48] T. B. Carlos, J. P. C. Rodrigues, R. C. A. de Lima, and D. Dhima, "Experimental analysis on flexural behaviour of RC beams strengthened with CFRP laminates and under fire conditions," *Compos. Struct.*, vol. 189, pp. 516–528, 2018, doi: 10.1016/j.compstruct.2018.01.094.
- [49] ASTM C 1437-07, "Standard Test Method for Flow of Hydraulic Cement Mortar," *Annu. B. ASTM Stand.*, pp. 6–7, 2009.
- [50] ASTM Committee, "ASTM C109/C109M-02 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars," *Annu. B. ASTM Stand.*, vol. 04, pp. 1–6, 2002, doi: 10.1520/C0109.
- [51] I. Kett, "Compressive Strength of Hydraulic Cement Mortars (C 109)," *Eng. Concr.*, pp. 29–31, 2009, doi: 10.1201/9781420091175-c5.
- [52] J. C. Mendes *et al.*, "On the relationship between morphology and thermal conductivity of cement-based composites," *Cem. Concr. Compos.*, vol. 104, no. October 2018, p. 103365, 2019, doi: 10.1016/j.cemconcomp.2019.103365.
- [53] A. S. Gill and R. Siddique, "Strength and micro-structural properties of self-compacting concrete containing metakaolin and rice husk ash," *Constr. Build. Mater.*, vol. 157, pp. 51–64, 2017, doi: 10.1016/j.conbuildmat.2017.09.088.

- [54] J. MacMullen, Z. Zhang, E. Rirsch, H. N. Dhakal, and N. Bennett, “Brick and mortar treatment by cream emulsion for improved water repellence and thermal insulation,” *Energy Build.*, vol. 43, no. 7, pp. 1560–1565, 2011, doi: 10.1016/j.enbuild.2011.02.014.
- [55] S. M. S. Kazmi, S. Abbas, M. J. Munir, and A. Khitab, “Exploratory study on the effect of waste rice husk and sugarcane bagasse ashes in burnt clay bricks,” *J. Build. Eng.*, vol. 7, pp. 372–378, 2016, doi: 10.1016/j.job.2016.08.001.
- [56] S. Abbas, S. M. S. Kazmi, and M. J. Munir, “Potential of rice husk ash for mitigating the alkali-silica reaction in mortar bars incorporating reactive aggregates,” *Constr. Build. Mater.*, vol. 132, pp. 61–70, 2017, doi: 10.1016/j.conbuildmat.2016.11.126.
- [57] ASTM C 270-07, “Standard Specification for Mortar for Unit Masonry,” *United States Am. Soc. Test. Mater.*, pp. 2–13, 2007, doi: 10.1520/C0270-14A.Copyright.
- [58] A. Shenoy, S. Kumar, A. Tantri, and A. Lakshmi, “STUDY OF STATIC AND DYNAMIC MODULUS OF ELASTICITY OF UHPC WITH AND WITHOUT COARSE AGGREGATES,” no. June, pp. 2425–2430, 2018.
- [59] H. Lime, M. Cabinets, and M. Rooms, “Standard Specification for Mortar for Unit Masonry 1,” pp. 1–14, 2017, doi: 10.1520/C0270-14A.Copyright.
- [60] M. Goedkoop, M. Oele, J. Leijting, T. Ponsioen, and E. Meijer, “Introduction to LCA with SimaPro Colophon,” *Introd. to LCA with SimaPro*, no. November, 2016.
- [61] A. Jayalath, S. Navaratnam, T. Ngo, P. Mendis, N. Hewson, and L. Aye, “Life cycle performance of Cross Laminated Timber mid-rise residential buildings in Australia,” *Energy Build.*, vol. 223, p. 110091, 2020, doi: 10.1016/j.enbuild.2020.110091.
- [62] S. Pushkar, “The effect of different concrete designs on the life-cycle assessment of the environmental impacts of concretes containing furnace

- bottom-ash instead of sand,” *Sustain.*, vol. 11, no. 15, 2019, doi: 10.3390/su11154083.
- [63] F. Colangelo, A. Forcina, I. Farina, and A. Petrillo, “Life Cycle Assessment (LCA) of different kinds of concrete containing waste for sustainable construction,” *Buildings*, vol. 8, no. 5, 2018, doi: 10.3390/buildings8050070.
- [64] Standards Australia, “Standard Australia, Environmental management - Life cycle assessment - Principles and framework in: AS ISO 14040, Australia, 2019,” *Stand. Aust. Environ. Manag. - Life cycle Assess. - Princ. Framew. AS ISO 14040, Aust. 2019*, 2019, [Online]. Available: https://infostore.saiglobal.com/en-us/Standards/AS-ISO-14040-2019-1153344_SAIG_AS_AS_2737699/.
- [65] “BSI, Sustainability of construction works - Assessment of environmental performance of buildings,” 2012, [Online]. Available: <https://www.en-standard.eu/bs-en-15978-2011-sustainability-of-construction-works-assessment-of-environmental-performance-of-buildings-calculation-method/>.
- [66] Astm, “Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use,” *Annu. B. ASTM Stand.*, no. C, pp. 3–6, 2010, doi: 10.1520/C0618.
- [67] Y. Qu, J. Chen, L. Liu, T. Xu, H. Wu, and X. Zhou, “Study on properties of phase change foam concrete block mixed with paraffin / fumed silica composite phase change material,” *Renew. Energy*, vol. 150, pp. 1127–1135, 2020, doi: 10.1016/j.renene.2019.10.073.