

DAFTAR PUSTAKA

- AASHTO M 295. (2007). *Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete American Association of State Highway and Transportation Officials Washington DC.*
- Achmad, S. A., Wibowo, A., & Hidayat, M. (2014). Pengaruh Campuran Bottom Ash dan Lama Perendaman Air Laut Terhadap Kuat Tekan Pada Silinder Beton.
- Adam, A. (2009). *Strength and Durability Properties of Alkali Activated Slag and Fly Ash-Based Geopolymer Concrete.* [Thesis] ,School of Civil, Environmental and Chemical Engineering, Melbourne: RMIT University.
- Affandhie, B. A., Kurniasari, P. T., Darmawan, M. S., Subekti, S., Wibowo, B., Husin, N. A., . . . Irawan, S. (2017). The Effects of Bottom Ash on Setting Time and Compressive Strength of Fly Ash Geopolymer Paste. *IOP Conf. Series: Materials Science and Engineering* 267 (2017) 012002.
- Al Bakri, M., A. Mohd, H. K., Abdulkareem, O. A., Ghazali, C. M., Rafiza, A., & Norazian, M. N. (2012). Optimization of alkaline activator/fly ash ratio on the compressive strength of manufacturing fly ash-based geopolymer. *Appl. Mech. Mater.*, 110: 734–739.
- ASTM C618-03. (2003). *Standard Specification for Fly Ash and Raw or Calcinated Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.* West Conshohocken: ASTM International.
- ASTMC109/ C109M. (2016). *Standard test method for compressive strength of hydraulic cement mortars (Using 2-in. or 50-mm CubeSpecimens).* West Conshohocken: ASTM International.
- ASTMC191-13. (2013). *Standard Test Methods for Time of Setting of Hydraulic Cement by Vicat Needle.* West Conshohocken: ASTM International.

- Azzura, S. N. (2019, Desember 3). *Indonesia Diharapkan Bisa Pakai Limbah Batubara untuk Konstruksi*. Retrieved from Merdeka.com: <https://www.merdeka.com/uang/indonesia-diharapkan-bisa-pakai-limbah-batubara-untuk-konstruksi.html>
- Bayuaji, R., Sigit, D. M., Wibowo, B., Ahmad, H. N., Subekti, S., Ekaputri, J., & editors. (2015). The Influence of Chloride Environment on Compressive Strength of Geopolymer Concrete with Fly Ash Using Taguchi Approach. Applied Mechanics and Materials. *Trans Tech Publ.*
- Bell, J. L., Gordon, M., & Kriven, W. M. (2005). Use of geopolymeric cements as a refractory adhesive for metal and ceramic joins. *Ceramic Engineering and Science Proceedings*, 26, 407–413.
- Comrie, D. C., & Kriven, W. M. (2003). Composite cold ceramic geopolymer in a refractory application. *Ceramic Transactions*, 153, 211–225.
- Davidovits, J. (1982a). The need to create a new technical language for the transfer. *Transfer and Exploitation of Scientific and Technical Information, EUR 7716*, Luxembourg, Commission of the European Communities.
- Davidovits, J. (1982b). *Mineral polymers and methods of making them*. Amerika Serikat.
- Davidovits, J. (1991). Geopolymers – Inorganic polymeric new materials. *Journal of Thermal Analysis*, 37, 1633–1656.
- Davidovits, J. (2002). 30 Years of Successes and Failures in Geopolymer Applications. *Geopolymer 2002 Conference*, 1-15.
- Davidovits, J. (2005). *Green Chemistry and Sustainable Development Solutions*. Perancis: Institut Geopolymere.
- Davidovits, J. (2008). *Geopolymer Chemistry and Applications*. Saint-Quentin, France: Institut Geopolymer.
- Davidovits, J. (2011). *Geopolymer chemistry and applications, 3rd edn*. Perancis: Institut Geopolymere.

- Dimas, D., Giannopoulou, I., & Panias, D. (2009). Polymerization in sodium silicate solutions: a fundamental process in geopolymers technology. *J Mater Sci* (2009) 44, 3719–3730.
- Duxson, P., Fernández-Jiménez, A., Provis, J., Lukey, G., Palomo, A., & Van Deventer, J. (2007). Geopolymer technology: the current state of the art. *J Mater Sci*, 4:2917 2933.
- Giancaspro, J., Balaguru, P. N., & Lyon, R. E. (2006). Use of inorganic polymer to improve the fire response of balsa sandwich structures. *Journal of Materials in Civil Engineering*, 18, 390–397.
- Hajimohammadi, A., & Van Deventer, J. (2015). Dissolution behaviour of source materials for synthesis of geopolymer binders: a kinetic approach. *Int J Miner Process*, 153:80–86.
- Hadjito, D., & Rangan, B. V. (2005). *Development and properties of low-calcium fly ash-based geopolymer concrete*. Perth, Australia: Research report GC1, Faculty of Engineering Curtin University of Technology.
- Hadjito, D., Wallah, S. E., Sumajouw, D. M., & Rangan, B. V. (2004). On the development of fly ash-based geopolymer concrete. *ACI Material Journal* 101, 467-472.
- Heah, C. (2013). Strength and microstructural properties of mechanically activated kaolin geopolymers. *Adv Mater Res*, 626:926–930.
- Henry, L., Hilliams, B., & Kirk, H. (2007). Improving Freezing and Thawing Properties of Fly Ash Bricks.
- Joshi, R., & Lohita, R. (1997). *Fly ash in concrete: production, properties and uses*. Amsterdam: Gordon and Breach Science Publishers.
- Kamseu, E., à Moungam, L., Cannio, M., Billong, N., Chaysuwan, D., Melo, U., & al., e. (2017). Substitution of sodium silicate with rice husk ash-NaOH solution in metakaolin based geopolymer cement concerning reduction in global warming. *Journal of Cleaner Production*, 142:3050-60.

- Khale, D., & Chaudhary, R. (2007). Mechanism of geopolymers and factors influencing its development: a review. *J Mater Sci*, 42:729–46.
- Kong, D., Sanjayan, J., & Sagoe-Crentsil, K. (2008). Factors affecting the performance of metakaolin geopolymers exposed to elevated temperatures. *J Mater Sci*, 43:824–31.
- Kriven, W. M., Bell, J. L., & Gordon, M. (2004). Geopolymer refractories for the glass manufacturing industry. *Ceramic Engineering and Science Proceedings*, 25, 57–79.
- Krivenko, P. V., & Kovalchuk, G. Y. (2007). Directed synthesis of alkaline aluminosilicate minerals in a geocement matrix. *Journal of Materials Science*, 42, 2944–2952.
- Kumar, S., Kumar, R., & Mehrotra, S. (2010). Influence of granulated blast furnace slag on the reaction, structure and properties of fly ash based geopolymer. *J Mater Sci*, 45:607–615.
- Lăzărescu, A. V., Szilagyi, H., Baeră, C., & Ioani, A. (2017). The Effect of Alkaline Activator Ratio on the Compressive Strength of Fly Ash-Based Geopolymer Paste. *IOP Conf. Series: Materials Science and Engineering* 209 (2017) 012064.
- Lemougna, P., Mackenzie, J., Jameson, G., Rahier, H., & Melo, U. (2013). The role of iron in the formation of inorganic polymers (geopolymers) from volcanic ash: a ^{57}Fe Mossbauer spectroscopy study. *J Mater Sci*, 48(15):5280–5286.
- Lincolen, K. (2017). Pengaruh Abu Terbang Sebagai Bahan Pengganti Semen Pada Beton Beragregat Halus Bottom Ash. [Skripsi]. Fakultas Teknik, Program Studi Teknik Sipil, Universitas Lampung.
- Lyon, R. E., Balaguru, P. N., Foden, A., Sorathia, U., Davidovits, J., & Davidovics, M. (1997). Fire-resistant aluminosilicate composites. *Fire and Materials*, 21, 67–73.

- Mustafa, A. M., Omar, A. K., Kareem, A., & Myint, S. (2009). Study On The Effect Of Alkaline Activators Ratio In Preparation Of Fly Ash-Based Geopolymer. *RAMM & ASMP 2009 Conference Paper*.
- Naghizadeh, A., & Ekolu, S. (2017). Mixture factors influencing alkali-silica reaction in fly ash geopolymers mortars. In: *International conference on advances in construction materials and systems*, 395–400.
- Nazari, A., Bagheri, A., & Riahi, S. (2011). Properties of geopolymer with seeded fly ash and rice husk bark ash. *Materials Science and Engineering: A*, 528(24):7395-401.
- Nergis, D. D., Abdullah, M. M., Vizureanu, P., & Tahir, M. F. (2018). Geopolymers and Their Uses: Review. *IOP Conf. Series: Materials Science and Engineering* 374 (2018) 012019.
- Nikolic, V., Komljenovic, M., Basˇcarevic, Z., Marjanovic, N., Miladinovic’, Z., & Petrovic’, R. (2015). The influence of fly ash characteristics and reaction conditions on strength and structure of geopolymers. *Constr Build Mater*, 94:361–370.
- Paija, N., Kolay, P. K., Mohanty, M., & Kumar, S. (2020). Ground Bottom Ash Application for Conventional Mortar and Geopolymer Paste. *J. Hazard. Toxic Radioact. Waste*.
- Palomo, A., Blanco-Varela, M. T., Granizo, M. L., Puertas, F., T., V., & W., G. M. (1999). Chemical stability of cementitious materials based on metakaolin. *Cement and Concrete Research*, 29: 997–1004.
- Phoo-ngernkham, T., Maegawa, A., Mishima, N., & Hatanaka, S. (2015). Effects of sodium hydroxide and sodium silicate solutions on compressive and shear bond strengths of FA–GBFS geopolymer. *Construction and Building Materials* 91, 1-8.
- Provis, J. L., Lukey, G. C., & Van Deventer, J. S. (2005). Do geopolymers actually contain nanocrystalline zeolites? – A re-examination of existing results. *Chemistry of Materials*, 17, 3075–3085.

- Rangan, B. (2008). Fly ash-based geopolymers concrete.
- Reddy, M., Dinakar, P., & Rao, B. (2016). A review of the influence of source material's oxide composition on the compressive strength of geopolymers concrete. *Microporous Mesoporous Mater*, 234:12–23.
- Ryu, G. S., Lee, Y. B., Koh, K. T., & Chung, Y. S. (2013). The mechanical properties of fly ash-based geopolymers concrete with alkaline activators. *Construction and Building Materials* 47, 409–418.
- SNI 03-3449-2002. (2002). *Tata Cara Rencana Pembuatan Campuran Beton Ringan Dengan Agregat Ringan*.
- SNI 15-2049-2004. (2004). *Semen Portland*.
- SNI 2460:2014. (2014). *Spesifikasi abu terbang batubara dan pozolan alam mentah atau yang telah dikalsinasi untuk digunakan dalam beton*.
- Subekti, S., Bayuaji, R., Darmawan, M. S., Husin, N. A., Wibowo, B., Anugraha, B., . . . Dibiantara, D. (2017). Review: Potential Strength of Fly Ash-Based Geopolymers Paste with Substitution of Local Waste Materials with High-Temperature Effect. *IOP Conf. Series: Materials Science and Engineering* 267 (2017) 012001 .
- Talling, B. (2002). Geopolymers give fire safety to cruise ships. *Geopolymers 2002. Turn Potential into Profit*, Melbourne, Australia, Lukey, G. C. (Ed.), CD ROM Proceedings.
- Tchadjie, L. N., & Ekolu, S. O. (2017). Enhancing the reactivity of aluminosilicate materials toward geopolymers synthesis. *J Mater Sci*.
- Triwidinata, S., Sebayang, S., & Irianti, L. (2017). Pengaruh Bottom Ash sebagai Bahan Pengganti Sejumlah Pasir Terhadap Kuat Tekan, Kuat Lentur dan Modulus Elastitas Beton Mutu Tinggi. *Jurnal Rekayasa Sipil dan Desain*, Vol 5, No 2.
- Van Chanh, N., Trung, B., D, V. T., & editors. (2008). *Recent research geopolymers concrete*. Vietnam: The 3rd ACF International Conference-ACF/VCA.

- Van Van Deventer, J., Provis, J., & Duxson, P. (2012). Technical and commercial progress in the adoption of geopolymers cement. *Miner Eng* 29, 89–104.
- Wang, S.-D., Scrivener, K. L., & Pratt, P. L. (1994). Factors affecting the strength of alkali-activated slag. *Cement and Concrete Research*, 24(6), 1033-1043.
- Wardani, S. P. (2008). Pemanfaatan Limbah Batubara (Fly Ash) Untuk Stabilisasi Tanah Maupun Keperluan Teknik Sipil Lainnya Dalam Mengurangi Pencemaran Lingkungan. Fakultas Teknik Universitas Diponegoro. Semarang.
- Wastiels, J., Wu, X., Faignet, S., & Patfoort, G. (1993). Mineral polymer based on fly ash. *Proceedings of the 9th International Conference on Solid Waste Management*, Philadelphia, PA, 8pp.
- Widayanti, A., Soemitro, R. A., Suprayitno, H., & Ekaputri, J. J. (2018). Characterization and compressive strength of fly ash based-geopolymer paste . *MATEC Web of Conferences* 195, 01023.