

Daftar Pustaka

- A. A. Bogno, J. E. Spinelli, C. R. M. Afonso, and H. Henein (2015) "Microstructural and mechanical properties analysis of extruded Sn-0.7Cu solder alloy," *Journal of Materials Research and Technology*, vol. 4, no. 1, pp. 84–92, doi: 10.1016/J.JMRT.2014.12.005.
- A. Abushanab and W. Alnahhal, "Bond strength of corroded reinforced recycled aggregate concrete with treated wastewater and fly ash," *J. Build. Eng.*, vol. 79, no. September 2023, p. 107778, 2025, doi: 10.1016/j.jobbe.2023.107778
- A. Al-hamrani and W. Alnahhal, "Bond durability of sand coated and ribbed basalt FRP bars embedded in high-strength concrete," *Constr. Build. Mater.*, vol. 406, no. September, p. 133385, 2023, doi: 10.1016/j.conbuildmat.2023.133385.
- A. Qasem, Y. S. Sallam, H. H. Eldien, and B. H. Ahangarn, "Bond-slip behavior between ultra-high-performance concrete and carbon fiber reinforced polymer bars using a pull-out test and numerical modelling," *Constr. Build. Mater.*, vol. 260, p. 119857, 2020, doi: 10.1016/j.conbuildmat.2020.119857.
- ACI 408R-12, (2012). Bond and Development of Straight Reinforcing Bars in Tension, in: ACI Committee 408 (Ed.) American Concrete Institute, Farmington Hills, Michigan, USA, p. 38.
- Across, F. (2015). the Ocean : the Ocean : 347(6223)
- A. I. Al-hadithi and N. N. Hilal, (2016). "The Possibility of Enhancing Some Properties of Self-Compacting Concrete by Adding Waste Plastic Fibers," *J. Build. Eng.*, doi: 10.1016/j.jobbe.2016.06.011.
- Akinyele JO, Ajede A. (2018). The use of granulated plastic waste in structural concrete. *African J Sci Technol Innov Dev* 2018;10(2):169–75.
- ASTM C33 (2018). Standard Specification for Concrete Aggregates. United States: ASTM.
- ASTM C 39, (2005). *Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens (ASTM C 39-05)*. USA: ASTM International.
- ASTM C78-02, (2017). Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading). ASTM Standards.

- ASTM Internasional (2001), ASTM C 136 – 01. *Standard test method for sieve Analysis of Fine and Coarse Aggregates*. United States : ASTM Internasional.
- ASTM C330-03, (1996), Standard Specification for Lightweight Aggregates for Structural Concrete, ASTM Standards: Concrete and Aggregates, V.04.02., Philadelphia.
- ASTM C469-02, (2017). Standard Test Method for Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression. ASTM Standards.
- American Standard Testing and Materials. (1999). Standard Specification for Chemical Admixtures for Concrete. ASTM C494 / C494M – 17. United States: ASTM.
- ASTM C567/C567M-19, (2019). Standard Test Method for Determining Density of Structural Lightweight Concrete, ASTM Standards.
- ASTM C597-02, (2012). Standard Test Method for Pulse Velocity Through Concrete. ASTM Standards.
- American Standard Testing and Materials. (1999). Standard Specification for Chemical Admixtures for Concrete. ASTM C494 / C494M – 17. United States: ASTM.
- Awoyera, P. O., Olalusi, O. B., & Iweriebo, N. (2021). Materialia Physical , strength , and microscale properties of plastic fiber-reinforced concrete containing fine ceramics particles. *Materialia*, 15(October 2020), 100970.
<https://doi.org/10.1016/j.mtla.2020.100970>
- B. Olawale, T. Abdalla, T. S. Alahmari, and R. Hassan, “Adaptive reuse of waste plastic as binders in composites for sustainable construction,” *Clean. Eng. Technol.*, vol. 22, no. September, p. 100812, 2024, doi: 10.1016/j.clet.2024.100812.
- Badan Standarisasi Nasional, (20xx). RSNI 4803:20xx Metode uji angka pantul beton keras, Jakarta, Indonesia.
- Badan Standarisasi Nasional, (2002). SNI 03-2491-2002: Metode Pengujian Kuat Tarik Belah Beton. BSN. Bandung.
- Badan Standarisasi Nasional (2015). *SNI 2049:2015 Semen Portland*. Jakarta: Badan Standarisasi Nasional
- Badan Standarisasi Nasional, (2019). Standar Tata Cara Perhitungan Struktur Beton untuk Bangunan Gedung (SNI 03-2847-2019). Jakarta, Indonesia.

- Badan Standardisasi Nasional, (2004). Semen Portland Komposit, SNI, 15 7064-2004.
- Badan Standarisasi Nasional, (2008). SNI 1972:2008 Cara Uji Slump Beton, Jakarta, Indonesia.
- Badan Standarisasi Nasional, (2011). SNI 0594:2011. Polipropilena, Jakarta, Indonesia.
- Badan Standarisasi Nasional, (2011). SNI 1974-2011 Cara Uji Kuat Tekan Beton dengan Benda Uji Silinder yang Dicitak, Jakarta, Indonesia.
- Badan Standarisasi Nasional, (2015). Standar Nasional Indonesia Semen Portland SNI 15-2049-2015 Handbook.
- Badan Standardisasi Nasional. (2019). SNI - 1726 - 2019 Tata Cara Perencanaan Ketahanan Gempa untuk Struktur Bangunan Gedung dan Nongedung. Jakarta: Badan Standardisasi Nasional.
- Batayneh M, Marie I, Asi I.(2007). Use of selected waste materials inconcrete mixes. *Waste Manag* 2007;27(12):1870–6.
- M. Belmokaddem, A. Mahi, Y. Senhadji, and B. Yilmaz, “Mechanical and physical properties and morphology of concrete containing plastic waste as aggregate,” *Constr. Build. Mater.*, vol. 257, p. 119559, 2020, doi: 10.1016/j.conbuildmat.2020.119559.
- Bouwmeester, H., Hollman, P.C.H., Peters, R.J.B., (2015). Potential health impact of environmentally released micro-and nanoplastics in the human food production chain: experiences from nanotoxicology. *Environ. Sci. Technol.* 49, 8932–8947.
- Chang, X., Xue, Y., Li, J., Zou, L., Tang, M., (2020). Potential health impact of environmental micro-and nanoplastics pollution. *J. Appl. Toxicol.* 40, 4–15.
- Choi YW, Moon DJ, Kim YJ, Lachemi M. (2009). Characteristics of mortar and concrete containing fine aggregate manufactured from recycled waste polyethyleneterephthalate bottles. *Constr Build Mater* 2009;23(8):2829–35.
- C. Albano, N. Camacho, M. Hernández, A. Matheus, and A. Gutiérrez, “Influence of content and particle size of waste pet bottles on concrete behavior at different w / c ratios,” *Waste Manag.*, vol. 29, no. 10, pp. 2707–2716, 2009, doi: 10.1016/j.wasman.2009.05.007.

- Cook, R.D., Malkus, D.S., Plesha, M.E., Witt, R.J. (2002). “Concepts and Applications of Finite Element Analysis”, John Wiley and Sons, Inc., New York, USA.
- Fahad. K. Alqahtani, G. Ghataora, M. I. Khan, and S. Dirar, “Novel lightweight concrete containing manufactured plastic aggregate,” *Constr. Build. Mater.*, vol. 148, pp. 386–397, 2017, doi: 10.1016/j.conbuildmat.2017.05.011.
- FEB CEB-FIP, *Bond and anchorage of embedded reinforcement*. FIB International, 2014.
- Felippa, C.A. (2004). “Introduction to Finite Element Methods”, Department of Aerospace Engineering Sciences and Center for Aerospace Structures, University of Colorado, Boulder, Colorado 80309-0429, USA.
- Ghernouti Y, Rabehi B, Safi B, Chaid R. (2014) Use of recycled plastic bag waste in the concrete; 2014.
- Hassani, A., Ganjidoust, H., Maghanaki, A.A., (2005). Use of plastic waste (polyethylene terephthalate) in asphalt concrete mixture as aggregate replacement. *Waste Management & Research* 23, 322–327.
- H. Lin, Y. Zhao, J. Ozbolt, P. Feng, C. Jiang, and R. Eligehausen, “Analytical model for the bond stress-slip relationship of deformed bars in normal strength concrete,” *Constr. Build. Mater.*, vol. 198, pp. 570–586, 2019, doi: 10.1016/j.conbuildmat.2018.11.258.
- Huang, Z.; Engström, B.; Magnusson, “Experimental and Analytical Studies of the Bond Behavior of Deformed Bars in High Strength Concrete,” in *Proceedings of the 4th International Symposium on the Utilization of High Strength/ High Performance Concrete*, 1996, pp. 1115–1124.
- Ibrahim Almeshal, B. A. Tayeh, R. Alyousef, H. Alabduljabbar, and A. M. Mohamed, (2020). “Eco-friendly concrete containing recycled plastic as partial replacement for sand,” *Integr. Med. Res.*, vol. 9, no. 3, pp. 4631–4643, doi: 10.1016/j.jmrt.2020.02.090.
- J. O. Akinyele, R. W. Salim, and G. Oyeti, (2016) “Use of Recycled Polypropylene Grains as Partial Replacement of Fine Aggregate in Reinforced Concrete Beams,” vol. 8838, no. December, doi: 10.3846/2029882X.2015.1070697.

- J. Islam, et al (2021). “Effect of polypropylene plastic on concrete properties as a partial replacement of stone and brick aggregate,” *Case Stud. Constr. Mater.*, vol. 15, no. July, p. e00627, doi: 10.1016/j.cscm.2021.e00627.
- Jambeck, J.R., Geyer, R., Wilcox, Chris., Theodore, R.S., Perryman, (2015). Plastic waste inputs from land into the ocean. *Science* 347 (6223), 768–770. <https://doi.org/10.1126/science.1260352>
- J. Gertsakis, H. Lewis, (2003) Sustainability and the Waste Management Hierarchy, RMIT University, Melbourne, Australia, <http://www.ecorecycle.vic.gov>
- Khaksefidi, S., Ghalehnovi, M., & Brito, J. De. (2020). Bond behaviour of high-strength steel rebars in normal (NSC) and ultra-high performance concrete (UHPC). *Journal of Building Engineering*, 101592. <https://doi.org/10.1016/j.jobe.2020.101592>
- L. Huang, Y. Chi, L.H. Xu, P. Chen, A. Zhang, Local bond performance of rebar embedded in steel-polypropylene hybrid fiber reinforced concrete under monotonic and cyclic loading, *Constr. Build. Mater.* 103 (2016) 77–92, <https://doi.org/10.1016/j.conbuildmat.2015.11.040>.
- L. A. Parsons and S. O. Nwaubani, “Mechanical and durability performance of concrete made using acrylonitrile butadiene styrene plastic from waste-EEE as a partial replacement of the coarse aggregate,” *J. Build. Eng.*, vol. 85, no. February, p. 108635, 2024, doi: 10.1016/j.jobe.2024.108635.
- Li Z (2011) *Advanced Concrete Technology*. Wiley, Hoboken, NJ, USA
- M. Aqeel. Ashraf, M. J. Maah, I. Yusoff, and A. Wajid, (2011). “Sand mining effects , causes and concerns : A case study from Bestari Jaya , Selangor , Peninsular Malaysia,” vol. 6, no. 6, pp. 1216–1231, doi: 10.5897/SRE10.690.
- Ma H and Li Z (2013) Realistic pore structure of Portland cement paste: experimental study and numerical simulation. *Computers and Concrete* 11(4): 317–336.
- Ma H, Tang S and Li Z (2013) New pore structure assessment methods for cement paste. *Journal of Materials in Civil Engineering*, [http://dx.doi.org/10.1061/\(ASCE\)MT.1943-5533.0000982](http://dx.doi.org/10.1061/(ASCE)MT.1943-5533.0000982), in press.
- M. Belmokaddem, A. Mahi, Y. Senhadji, and B. Yilmaz, (2020). “Mechanical and physical properties and morphology of concrete containing plastic waste as

- aggregate,” *Constr. Build. Mater.*, vol. 257, p. 119559, doi: 10.1016/j.conbuildmat.2020.119559.
- M. Fakoor and M. Nematzadeh, (2021) “Evaluation of post-fire pull-out behavior of steel rebars in high-strength concrete containing waste PET and steel fibers : Experimental and theoretical study,” *Constr. Build. Mater.*, vol. 299, p. 123917, 2021, doi: 10.1016/j.conbuildmat.2021.123917.
- M. Gesoglu, E. Güneyisi, O. Hansu, S. Ipek, D.S. Asaad, Influence of waste rubber utilization on the fracture and steel–concrete bond strength properties of concrete, *Constr. Build. Mater.* 101 (2015) 1113–1121.
- M. Shams, I. Alam, and S. Mahbub, (2021). “Plastic pollution during COVID-19 : Plastic waste directives and its long-term impact on the environment,” *Environ. Adv.*, vol. 5, p. 100119, doi: 10.1016/j.envadv.2021.100119.
- Maher. A. Mustafa, I. Hana, R. Mahmoud, and B. A. Tayeh, (2019). “Effect of partial replacement of sand by plastic waste on impact resistance of concrete : experiment and simulation,” vol. 20, no. June, pp. 519–526, doi: 10.1016/j.istruc.2019.06.008.
- M. Gesoglu, E. Güneyisi, O. Hansu, S. Ipek, and D. S. Asaad, (2015). “Influence of waste rubber utilization on the fracture and steel – concrete bond strength properties of concrete,” vol. 101, pp. 1113–1121, doi: 10.1016/j.conbuildmat.2015.10.030.
- Mustafa MA-T, Hanafi I, Mahmoud R, Tayeh BA, (2019). Effect of partial replacement of sand by plastic waste on impact resistance of concrete: experiment and simulation. *Structures* ; 20:519–26.
- N. Saikia, J. De Brito. (2012). Use of plastic waste as aggregate in cement mortar and concrete preparation: a review, *Constr. Build. Mater.* 34 (2012) 385–401, doi: 10.1016/j.conbuildmat.2012.02.066 .
- Nawy, Edward G,. (1998), *Beton Bertulang Suatu Pendekatan Dasar*. Cetakan kedua, Bandung: PT. Refika Aditama.
- Nawy, (1990), *Beton Bertulang - Suatu Pendekatan Dasar*, Penerbit Erlangga. Jakarta.
- O. Mokhtari and H. Nishikawa, “Effects of in and Ni addition on microstructure of Sn-58Bi solder joint,” *Journal of Electronic Materials*, vol. 43, no. 11, pp. 4158–4170, Nov. 2014, doi: 10.1007/S11664-014-3359-Z.

- Paul, M.B., Stock, V., Cara-Carmona, J., Lisicki, E., Shopova, S., Fessard, V., Braeuning, A., Sieg, H., Böhmer, L., (2020). Micro-and nanoplastics—current state of knowledge with the focus on oral uptake and toxicity. *Nanoscale Adv* 2, 4350–4367.
- P. Górak, P. Postawa, L. N. Trusilewicz, and A. Łagosz, “Journal Pre-proof,” *J. Build. Eng.*, p. 101882, 2020, doi: 10.1016/j.job.2020.101882.
- Pielou EC (1966). Species-diversity and pattern-diversity in the study of ecological succession. *J. Theo. Biol.*, 10(3): 370-383.
- P. O. Awoyera, O. B. Olalusi, and N. Iweriebo, “Materialia Physical , strength , and microscale properties of plastic fiber-reinforced concrete containing fine ceramics particles,” *Materialia*, vol. 15, no. October 2020, p. 100970, 2021, doi: 10.1016/j.mtl.2020.100970.
- Pamudji, G., Asriani, F., & Fauzi, A. (2019). Kekuatan lentur Balok Beton Ringan Beragregat Sampah Plastik PP. Seminar Nasional “Engembangan Sumber Daya Perdesaan Dan Kearifan Lokal Berkelanjutan IX,”
- Park, R & Paulay, T. (1975). *Reinforced Concrete Structure*. Department of Civil Engineering University of Canterbury. Christchurch. New Zealand. hal 394,396.
- Plastics Europe, Plastics—The facts, Plastics Europe-Association of Plastics Manufacturers, Auderghem, Belgium, (2018). doi:10.1016/j.marpolbul.2013.01.015
- R. Castillo, N. Almesfer, O. Saggi, and J. M. Ingham, (2020) “Light-weight concrete with artificial aggregate manufactured from plastic waste,” *Constr. Build. Mater.*, vol. 265, p. 120199, doi: 10.1016/j.conbuildmat.2020.120199.
- R. H. Faraj, A. F. H. Sherwani, L. H. Jafer, and D. F. Ibrahim, (2020) “Rheological behavior and fresh properties of self-compacting high strength concrete containing recycled PP particles with fly ash and silica fume blended,” *J. Build. Eng.*, p. 101667, doi: 10.1016/j.job.2020.101667. *Mater.*, vol. 15, no. July, p. e00627, 2021.doi: 10.1016/j.cscm.2021.e00627.
- Rai B, Rushad ST, Kr B, Duggal SK.(2012). Study of waste plastic mix concrete with plasticizer. *ISRN Civ Eng* 2012.

- RILEM TC, RC 6 Bond test for reinforcement steel. 2. Pull-out test, (1983), RILEM recommendations for the testing and use of constructions materials (1994) 218-220.
- R. Haigh, “The mechanical behaviour of waste plastic milk bottle fibres with surface modification using silica fume to supplement 10 % cement in concrete materials,” *Constr. Build. Mater.*, vol. 416, no. December 2023, p. 135215, 2024, doi: 10.1016/j.conbuildmat.2024.135215.
- S. A. Sayid, A. Dadan-Garba, D. E. Enenche, and B. A. Ikyo (2020) “Scanning Electron Microscopy (SEM) of the Bug Eye and Sand Coral,” *undefined*, vol. 08, no. 01, pp. 1–7, doi: 10.4236/MR.2020.81001.
- Schweitzer, J., 2014, Scanning Electron Microscope, <http://www.Purdue.edu/rem/rs/sem.html>, diakses Maret 2019.
- Silva, D. A., Betioli, A. M., Gleize, P. J. P., Roman, H. R., Gómez, L. A., & Ribeiro, J. L. D. (2005). Degradation of recycled PET fibers in Portland cement-based materials. *Cement and Concrete Research*, 35(9), 1741–1746. <https://doi.org/10.1016/j.cemconres.2004.10.040>
- Silva, A.L.P., Prata, J.C., Walker, T.R., Duarte, A.C., Ouyang, W., Barcel`o, D., Rocha-Santos, T.,(2021). Increased plastic pollution due to COVID-19 pandemic: Challenges and recommendations. *Chem. Eng. J.* 405, 126683 <https://doi.org/10.1016/j.cej.2020.126683> <https://doi.org/>.
- SNI 03-1972-1990,(1990) Metode Pengujian Slump Beton, Badan Standar Nasional, Indonesia.
- SNI 7656-2012. (2012): Tata cara pemilihan campuran untuk beton normal, beton berat dan beton massa, Badan Standarisasi Nasional, 1-48.
- T.A. Söylev, The effect of fibers on the variation of bond between steel reinforcement and concrete with casting position, *Constr. Build. Mater.* 25 (2011) 1736–1746. <http://dx.doi:10.1016/j.conbuildmat.2010.11.093>.
- Tibbetts, J.H., (2015). Managing marine plastic pollution: policy initiatives to address wayward waste. *Environ. Health Perspect.* 123 (4), 91–93. <https://doi.org/10.1289/ehp.123-A90>.
- Tjaronge, M. Wihardi, (2012). *Teknologi Bahan Lanjut : Semen dan Beton Berongga*, Telaga Zamzam, Makassar.

- Tao Liu, A. Nafees, M. Faisal, F. Aslam, and H. Alabduljabbar, (2022). “Comparative study of mechanical properties between irradiated and regular plastic waste as a replacement of cement and fine aggregate for manufacturing of green concrete,” *Ain Shams Eng. J.*, vol. 13, no. 2, p. 101563, doi: 10.1016/j.asej.2021.08.006.
- Tanol et al, (2022) “Influences of recycled plastic and treated wastewater containing with 50 % GGBS content in sustainable concrete mixes, doi: 10.1016/j.jmrt.2021.11.086.
- T. Sripan, S. Haruehansapong, W. Kroehong, and W. Senawang, “Assessment of bonding strength of steel bar in recycled aggregate concrete containing ground palm oil fuel ash,” *Innov. Infrastruct. Solut.*, 2024, doi: 10.1007/s41062-023-01360-x
- U. Ali, H. Khan, M. Aamir, K. Giasin, N. Habib, and M. Owais Awan, “Analysis of Microstructure and Mechanical Properties of Bismuth-Doped SAC305 Lead-Free Solder Alloy at High Temperature,” *Metals* 2021, Vol. 11, Page 1077, vol. 11, no. 7, p. 1077, Jul. 2021, doi: 10.3390/MET11071077.
- W. Harajli, M.H.; Hout, M.; Jalkh, “Local bond stress-slip behaviour of reinforcing bars embedded in plain and fiber concrete,” *ACI Mater. J.*, vol. 92, pp. 343–353., 1995.
- Yazıcı, H.S., Arel, The effect of steel fiber on the bond between concrete and deformed steel bar in SFRCs, *Constr. Build. Mater.* 40 (2013) 299–305, <https://doi.org/10.1016/j.conbuildmat.2012.09.098>.
- Y. Suk, S. Yi, M. Yu, W. Young, and E. Ik,(2013) “Effect of corrosion method of the reinforcing bar on bond characteristics in reinforced concrete specimens,” *Constr. Build. Mater.*, vol. 54, pp. 180–189, 2014, doi: 10.1016/j.conbuildmat.2013.12.065.
- Y. Wang, D. Joong, Y. Jic, and M. Lachemi,(2009). “Characteristics of mortar and concrete containing fine aggregate manufactured from recycled waste polyethylene terephthalate bottles,” *Constr. Build. Mater.*, vol. 23, no. 8, pp. 2829–2835, doi: 10.1016/j.conbuildmat.2009.02.036.
- Zhou, Z. and Qiao, P. (2018). Bond behavior of epoxy-coated rebar in ultra-high performance concrete. *Construction and Building Materials*, 182, 406-417

Lampiran-Lampiran

1. Sifat fisis Semen Portland Tonasa

Parameter kualitas Satuan	Unit	SNI 7064- 2014	Typical product	Range	
Properti fisis					
Kuat tekan					
• 3 hari	Min	kg/cm ²	130	180	+ 20
• 7 hari	Min	kg/cm ²	200	240	+ 20
• 28 hari	Min	kg/cm ²	280	310	+ 20
• Blaine	Min	m ² /g	280	450	+ 20
• Air content	Max	%	12	6.8	+ 2.2
Chemical Properties					
• SO ₃	Max	%	4	2	+ 0.5

Sumber : PT Semen Tonasa

2. Properti fisis Agregat

Uraian pengujian	Satuan	Hasil Pengujian	
		Pasir	Kerikil
Modulus kehalusan	%	2.44	5.96
Berat jenis semu	-	2.42	2.71
Berat jenis kering	-	2.25	2.54
Berat jenis SSD	-	2.48	2.985
Penyerapan Air	%	3.1	2.48
Kadar Air	%	3.4	1.78
Kadar Lumpur	%	1.58	5.36
Keausan Agregat	%	-	26.75
Berat Volume Padat	kg/ltr	1.34	1.27

3. Karakteristik Fisik Agregat

Item	Bulk Density (kg/m ³)	Penyerapan Air (%)	Kandungan lumpur (%)	Keausan Agregat
Agregat Kasar	1340	2.48	5.36	26.75
Agregat Halus	1270	3.1	1.58	-

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B. DATA KELUARGA

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2. Nama Ibu : Dra. Murniati Arsyad
3. Nama Isteri : Ade Okvianti Irlan., ST., M.Eng
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C. RIWAYAT PEKERJAAN

1. Civil Engineer dan Tenaga Ahli Struktur, Tahun 2011 - sekarang
2. Dosen tetap Progam Studi Teknik Sipil, Fakultas Teknologi Infrastruktur dan Kewilayahan, Institut Teknologi PLN Tahun 2017 - sekarang.
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D. RIWAYAT PENDIDIKAN

1. SD Negeri Panaikang 1/1, Makassar, Tahun 1994-1996
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3. SMP Negeri 8, Makassar, Tahun 2000-2001
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7. S2 Teknik Sipil, Universitas Hasanuddin, Tahun 2011-2013

E. PUBLIKASI IMLIAH

1. RISET BIDANG ILMU 1

Judul : Studi Karakteristik dan Kekuatan Lekatan Tulangan-Beton Berbahan Plastik Polypropylene (PP) sebagai substitusi Agregat Halus
 Jurnal : Publikasi Ilmiah Riset 1 (Proposal Penelitian)
 ISSN : 2087 – 7986
 Volume : 62 Nomor 2, Desember 2023
 Penerbit : Program Doktor Ilmu Teknik Sipil, Departemen Teknik Sipil, Fakultas Teknik, Unhas

2. RISET BIDANG ILMU 2

Judul : Sifat Fisis dan Mekanis Beton dengan Agregat Butiran Plastik Polypropylene
 Jurnal : Publikasi Ilmiah Riset 2 (Hasil Penelitian)
 ISSN : 2087 – 7986
 Volume : 63 Nomor 2, Desember 2023
 Penerbit : Program Doktor Ilmu Teknik Sipil, Departemen Teknik Sipil, Fakultas Teknik, Unhas

3. RISET BIDANG ILMU 3

Judul : Karakteristik Lekatan antara Tulangan dan Beton Berbahan Agregat Plastik Polypropylene (PP)
 Jurnal : Publikasi Ilmiah Riset 3 (Hasil Penelitian)
 ISSN : 2087 – 7986
 Volume : 65 Nomor 1, 2024
 Penerbit : Program Doktor Ilmu Teknik Sipil, Departemen Teknik Sipil, Fakultas Teknik, Unhas

4. JURNAL INTERNASIONAL

Judul : A Study on the Bond Characteristics of Steel Bars in Concrete Containing Polypropylene (PP) Plastic Particles as Fine Aggregate
 Jurnal : Engineering, Technology & Applied Science Research, Greece, (Terindeks Scopus Q2)
 ISSN : 1792-8036
 Volume : 14 Nomor 5
 Halaman : 16989-16997
 Penerbit : ETASR, Greece
 Doi : <https://doi.org/10.48084/etasr.8544>

F. SEMINAR NASIONAL

Judul : Aplikasi Sederhana Pemodelan Elemen Hingga Dynamic Explicit Balok Beton yang Menerima Beban Lentur

Nama Konferensi : Seminar Nasional Energi, Kelistrikan, Teknik Dan Informatika Volume 3 Tahun 2022, Institut Teknologi PLN (ITPLN)

Tempat : Daring (Webinar nasional)

Tanggal : 13 Desember 2022

Prosiding : Prosiding Seminar Nasional Energi, Kelistrikan, Teknik Dan Informatika Volume 3 Tahun 2022

Volume : 3

Halaman : 50

G. SEMINAR INTERNASIONAL

Judul : Selected Mechanical and Physical Properties Concrete with Polypropylene Plastic Granule Aggregate

Seminar : The 4th International Conference on Civil and Environmental Engineering (ICCEE) 2022

Tanggal : 4-5 Agustus 2022

Tempat : Bali, Indonesia

Prosiding : IOP Conference series : Earth and Enviromental Science (Terindeks Scopus Q4)

Status : Published (<https://iopscience.iop.org/article/10.1088/1755-1315/1117/1/012014>)