



DAFTAR PUSTAKA

- Abuzaid, W., Hawileh, R. dan Abdalla, J., 2021, Mechanical Properties of Strengthening 5083-H111 Aluminum Alloy Plates at Elevated Temperatures, *Infrastructures*, 6(8), hal. 1–17.
- Adomako, N.K., Park, H.J., Cha, S.C., Lee, M. dan Kim, J.H., 2021, Microstructure evolution and mechanical properties of the dissimilar joint between IN718 and STS304, *Materials Science and Engineering A*, 799(September 2020), hal. 140262. doi:10.1016/j.msea.2020.140262.
- Akram, J., Rao, P., Jindal, V. dan Misra, M., 2018, Evaluating location specific strain rates, temperatures and accumulated strains in friction welds through microstructure modeling, *Defence Technology*, 14(2), hal. 83–92. doi:10.1016/j.dt.2017.11.002.
- Allen, A.J. Hutchings C., M., Windsor, C., Andreani, 1985, Neutron diffraction methods for the study of residual stress fields, *Advances in Physics*, 34(4), hal. 445–473. doi:dx.doi.org/10.1080/00018738500101791.
- Ambriz, R.R. dan Jaramillo, D., 2014, Mechanical Behavior of Precipitation Hardened Aluminum Alloys Welds, *Light Metal Alloys Applications*, (June), hal. 35–59. doi:10.5772/58418.
- An, C.Y., 2010, Welding of AA1050 aluminum with AISI 304 stainless steel by rotary friction welding process, 2(3), hal. 301–306. doi:10.5028/jatm.2010.02037110.
- Arthur, P. boresi dan Schmidt, R.J., 2003, *ADVANCED MECHANICS*. 6th ed., Philadelphia: John Wiley & Sons.
- Ashfaq, M. dan Rao, K.J., 2014, Comparing bond formation mechanism between similar and dissimilar aluminium alloy friction welds, *Materials Science and Technology*, 30(3), hal. 329–338. doi:10.1179/1743284713Y.0000000360.
- ASM.matweb 2001,. Tersedia pada: <http://asm.matweb.com/search/SpecificMaterial.asp?bassnum=MA7075T6> (Diakses: 23 Januari 2022).
- ASM committee, 2004, *Tensile testing*. 2nd ed, *Quality*. 2nd ed. Diedit oleh J.R. Davis. ohio: ASM International.
- ASTM committe, 2010, ASTM E8 - Standard Test Methods for Tension Testing of Metallic Materials,in *ASTM Standards*. West Conshohocken, PA: ASTM International. doi:10.1520/E0008.
- ASTM committe, 2015, ASTM E466-15 : Standard Practice for Conducting Force Controlled Constant Amplitude Axial Fatigue Tests of Metallic Materials,in *ASTM Standards*. West Conshohocken: ASTM International, hal. 1–6. doi:10.1520/E0466-15.2.
- Athmane, S.A., Abdelkader, D., Mostefa, B., Abdelkrim, A. dan Belabbess, B.B., 2019, Cumulative damage model for glass-fiber reinforced composites under two blocks loading, *International Journal of Engineering Research in Africa*, 42(September), hal. 1–9. doi:10.4028/www.scientific.net/JERA.42.1.
- AWS, 1980, *AWS Welding Handbook*. 7th ed,. Diedit oleh W.H. Kearns. London: Macmillan Press LTD. doi:10.1007/978-1-349-04961-5.



- Baker, H., 1998, *Alloy Phase Diagrams, ASM Handbook*.
- Boyer, H.E. (ed.), 1986, *Atlas of Fatigue Curves*,. ASM Materials Park, Ohio: ASM International.
- Broughton, W., 2012, *Adhesives in Marine Engineering*. 1st ed, *Adhesives in Marine Engineering*. 1st ed. Diedit oleh Jan R. Weitzenböck. Cambridge: Woodhead Publishing Limited. Tersedia pada: <http://www.sciencedirect.com/science/article/pii/B9781845694524500060>.
- Çam, G. dan İpekoglu, G., 2017, Recent developments in joining of aluminum alloys, *International Journal of Advanced Manufacturing Technology*, 91(5–8), hal. 1851–1866. doi:10.1007/s00170-016-9861-0.
- Campbell, F., 2008, *Elements of Metallurgy and Engineering Alloys*,. Diedit oleh Campbell F. ASM International.
- Carpinteri, A. dan Paggi, M., 2009, A unified interpretation of the power laws in fatigue and the analytical correlations between cyclic properties of engineering materials, *International Journal of Fatigue*, 31(10), hal. 1524–1531. doi:10.1016/j.ijfatigue.2009.04.014.
- Chainarong, S., Meengam, C. dan Tehyo, M., 2017, Rotary Friction Welding of Dissimilar Joints between SSM356 and SSM6061 Aluminium Alloys Produced by GISS, *ENGINEERING JOURNAL*, 21(1), hal. 181–191. doi:10.4186/ej.2017.21.1.181.
- Chander, G.S., Reddy, G.M. dan Rao, A.V., 2012, Influence of Rotational Speed on Microstructure and Mechanical Properties of Dissimilar Metal AISI 304-AISI 4140 Continuous Drive Friction Welds, *Journal of Iron and Steel Research International*, 19(10), hal. 64–73. doi:10.1016/S1006-706X(12)60154-X.
- Chen, R., Chu, H. dan Lai, C., 2015, Effects of annealing temperature on the mechanical properties and sensitization of 5083-H116 aluminum alloy,in *Materials Design and Applications Design and Applications*, hal. 339–346. doi:10.1177/1464420713512249.
- Chen, S., Wu, C., Ou, Y. dan Yeh, Y., 2015, Hot Deformation Resistance of an AA5083 Alloy under High Strain Rate, *Key Engineering Materials*, 626, hal. 553–560. doi:10.4028/www.scientific.net/KEM.626.553.
- Chen, Y., Patrick T., Rippe., Christian M., Ben Mouritz A., Adrian P., Scott W., Brian Y., 2015, Overview of aluminum alloy mechanical properties during and after fires, *Fire Science Reviews*, 9(4), hal. 1–36. doi:10.1186/s40038-015-0007-5.
- Choi, Y. Choi, Young., Kim, Dae Up., Kang, Bong Yong., Park, Dong Ku., Lee Dong Jin., Lee Si Woo., Shin, Hee Tack.,, 2013, Forming of the precision aluminum tube for a light weight propeller shaft, *Journal of Mechanical Science and Technology*, 27(11), hal. 3445–3449. doi:10.1007/s12206-013-0868-2.
- Collins, 1980, *Failure of Materials in Mechanical Design : Analysis, Prediction, Prevention*, New York: John Wiley & Sons.
- Das, H., Upadhyay, P., Wang, T., Gwalani, B. dan Ma, X., 2021, Interfacial reaction during friction stir assisted scribe welding of immiscible Fe and Mg alloy system, *Scientific Reports*, 11(1), hal. 1–8. doi:10.1038/s41598-021-81266-9.



- Demirorer, M., Suder, W., Ganguly, S., Hogg, S. dan Naeem, H., 2020, Development of laser welding of high strength aluminium alloy 2024-T4 with controlled thermal cycle, *MATEC Web of Conferences*, 326(November), hal. 1–8. doi:10.1051/matecconf/202032608005.
- Dieter, G.E. dan Bacon, D., 1988, *MECHANICAL METALLURGY*. 3rd ed., London: McGraw-Hill Inc.
- Dieter, R., 1992, *Heat Effects of Welding*. 1st ed., Berlin: Springer-Verlag. doi:10.1007/978-3-642-48640-1.
- Dogahe, K., 2022, *Multiscale Fatigue Modelling of Metals*, Materials Research Forum. doi:10.21741/9781644901656.
- Doherty, R.D. Hughes, D A., Humphreys, F J., Jonas, J J., Jensen, D Juul., Kassner, M E., King, W E
- Mcnelley, T R., Mcqueen, H J., Rollett, A D, 1997, Current issues in recrystallization: a review, *Material science and engineering A*, 238, hal. 219–274.
- Emre, T.M. ait, Ozcelik., Huseyin, Zengin., Hayrettin, Ahlatci., Yunus, Turen., Ibrahim, Tozlu., Yavuz, S U N., 2015, Residual Stress Measurement in Rails by Destructive and Non Destructive Methode,in *Metal*. Brno, Czech Republic, EU, hal. 1–6.
- Farzadi, A., 2017, Correlation between precipitate microstructure and mechanical properties in AA7075-T6 aluminum alloy friction stir welded joints, *Materialwissenschaft und Werkstofftechnik*, 48(2), hal. 151–162. doi:10.1002/mawe.201700505.
- Friel, J.J. dan Lyman, C.E., 2006, X-ray Mapping in Electron-Beam Instruments, *Microscopy and Microanalysis*, 12(1), hal. 2–25.
- Frøseth, A.G., Høier, R., Derlet, P.M., Andersen, S.J. dan Marioara, C.D., 2003, Bonding in MgSi and Al-Mg-Si compounds relevant to Al-Mg-Si alloys, *Physical Review B - Condensed Matter and Materials Physics*, 67(22), hal. 1–11. doi:10.1103/PhysRevB.67.224106.
- Fukumoto, S., Tsubakino, H., Aritoshi, M., Tomita, T. dan Okita, K., 2002, Dynamic recrystallisation phenomena of commercial purity aluminium during friction welding, 18(February), hal. 219–225. doi:10.1179/026708301225000635.
- Fuwana, H., Katoh, K. dan Tokisue, H., 2010, Effects of friction welding conditions on the mechanical properties of friction welded joints in 7075 aluminium alloy, *Welding International*, (October 2014), hal. 37–41. doi:10.1080/09507119709448946.
- Gaber, A., Gaffar, M.A., Mostafa, M.S. dan Abo Zeid, A.F., 2006, Investigation of developed precipitates in Al-1·1 wt-%Mg 2Si balanced alloy by DSC and SEM techniques, *Materials Science and Technology*, 22(12), hal. 1483–1488. doi:10.1179/174328406X100707.
- Gan, W. Hofmann, Michael., Venzke, Volker., Randau, Christian., Huang, Yuanding., Kriele, Armin
- Brokmeier, Heinz-guenter., Mueller, Martin., 2017, Microstructure and Residual Stress in Rotary Friction Welded Dissimilar Metals of AA7020 Aluminium Alloy with 316L Steel, *Materials science forum*, 879, hal. 572–577.



doi:10.4028/www.scientific.net/MSF.879.572.

- Ganesh, Sarathi, N.Partha, M.Sivanesh dan S .Pravin Joseph Rajkumar, P.G.S., 2016, Welding and Analysis of Aluminium 5083 Alloy With Mild Steel By Friction Welding Process (Frw), *International Journal of Advanced Research Trends in Engineering and Technology*, 21(3), hal. 91–94.
- Gladman, T., 1999, Precipitation hardening of metals., *Materials Science and Technology*, 15(January), hal. 30–36. doi:10.1179/026708399773002782.
- Goldstein, J.I., Newbury, D.E., Michael, J.R., Ritchie, N.W.M., Scott, J.H.J. dan Joy, D.C., 2018, *Scanning Electron Microscopy and X-Ray Microanalysis*. 4th ed., New York: Springer Science.
- González-velázquez, J.L., 2018, *Structural Integrity 3 Fractography and Failure Analysis*. 1st ed., Diedit oleh J.A.F.O. Correia dan A.M.P. De Jesus. Mexico: Springer Science.
- Gouda, M. dan Riham, H., 2017, Comparison of GUM and Monte Carlo methods for the uncertainty estimation Comparison of GUM and Monte Carlo methods for the uncertainty estimation in hardness measurements, *International Journal of Metrology and Quality Engineering* [Preprint], (May 2019). doi:10.1051/ijmqe/2017014.
- Guo, J.F., Chen, H.C., Sun, C.N., Bi, G., Sun, Z. dan Wei, J., 2014, Friction stir welding of dissimilar materials between AA6061 and AA7075 Al alloys effects of process parameters, *Materials and Design*, 56, hal. 185–192. doi:10.1016/j.matdes.2013.10.082.
- Guo, X., Tao, L., Zhu, S. dan Zong, S., 2020, Experimental Investigation of Mechanical Properties of Aluminum Alloy at High and Low Temperatures, *Materials in Civil Engineering*, 32(2), hal. 1–11. doi:10.1061/(ASCE)MT.1943-5533.0003002.
- Gupta, A.K., Lloyd, D.J. dan Court, S.A., 2001, Precipitation hardening processes in an alloy Al-0.4%Mg-1.3%Si-0.25%Fe aluminum alloy, *Materials Science and Engineering A*, 301(2), hal. 140–146. doi:10.1016/S0921-5093(00)01814-1.
- Hubschen, G., Altpeter, I., Tschuncky, R. dan Herrmann, H.-G., 2016, *Materials Characterization Using Nondestructive Evaluation (NDE) Methods*. 1st ed., Duxford, uk: Woodhead Publishing. doi:<http://dx.doi.org/10.1016/B978-0-08-100040-3.00001-8>.
- Huskins, E.L., Cao, B. dan Ramesh, K.T., 2010, Strengthening mechanisms in an Al – Mg alloy, 527, hal. 1292–1298. doi:10.1016/j.msea.2009.11.056.
- Hynes, N.R.J. dan Velu, P.S., 2018, Effect of rotational speed on Ti-6Al-4V-AA 6061 friction welded joints, *Journal of Manufacturing Processes*, 32, hal. 288–297. doi:10.1016/j.jmapro.2018.02.014.
- Ilman, M.N., Sehono, Muslih, M.R. dan Wibowo, H., 2020, The application of transient thermal tensioning for improving fatigue crack growth resistance of AA5083-H116 FSW joints by varying secondary heating temperature, *International Journal of Fatigue*, 133(January 2019), hal. 1–11. doi:10.1016/j.ijfatigue.2019.105464.
- ISO/TTA 3:2001, 2001, *Polycrystalline materials - Determination of residual stress by neutron diffraction*, Diedit oleh ISO/TTA 3:2001. ISO.



- Jaap Schijve, 2008, *Fatigue of Structure and Materials*. 2nd ed., Delft: Springer Science.
- James, M.N. Hughes, D. J., Chen, Z., Lombard, H., Hattingh, D. G., Asquith, D., Yates, J. R., Webster, P. J., 2007, Residual stresses and fatigue performance, *Engineering Failure Analysis*, 14(2), hal. 384–395. doi:10.1016/j.engfailanal.2006.02.011.
- Jeffrey O. Bunch and Michael R. Mitchell, 2007, *Residual Stress Effects on Fatigue and Fracture Testing and Incorporation of Results Into Design*,. ASTM special technical publication.
- Jenkins, N.T. dan Eagar, T.W., 2005, Chemical analysis of welding fume particles, *Welding Journal (Miami, Fla)*, 84(6).
- Jimenez-mena, N., Sapanathan, T., Drezet, J.M., Pirling, T., Jacques, P.J. dan Simar, A., 2019, Residual stresses of friction melt bonded aluminum / steel joints determined by neutron diffraction, *Journal of Materials Processing Tech.*, 266(November 2018), hal. 651–661. doi:10.1016/j.jmatprotec.2018.11.030.
- Jin, M., Nam, H., Jang, D.Y., Sung, J. dan Eun, T., 2004, Residual stress measurement on welded specimen by neutron diffraction, *Journal of Materials Processing Technology* 155–156, 156, hal. 1171–1177. doi:10.1016/j.jmatprotec.2004.04.393.
- Karkhin, V.A., 2019, *Thermal Processes in Welding*. 2nd ed, *Welding International*. 2nd ed. St. Petersburg: Springer nature. Tersedia pada: <http://www.tandfonline.com/doi/abs/10.1080/09507110009549302%0Ahttp://link.springer.com/10.1007/978-981-13-5965-1>.
- Katoh, K. dan Tokisue, H., 2009, Properties of 6061 aluminium alloy friction welded joints, *Welding International*, (October 2013), hal. 37–41. doi:10.1080/09507119409548712.
- Kaufman, J.G., 2008, *Properties of Aluminium Alloys : Fatigue Data and the Effects of Temperature, Product Form, and Processing*. 1st ed., Materials Park, Ohio: ASM International.
- Kawai, G., Yamamoto, Y. dan Ichihara, T., 2006, Statistical fatigue properties of 2017 and 6061 aluminum alloy similar and dissimilar friction-welded joints, *Journal of Japan Institute of Light Metals*, 56(1), hal. 2–7.
- Kazandjian, 2018, *Fatigue Life Prediction of Aluminum Alloy 6063 for Vertical Axis Wind Turbine Blade Application*,. Tersedia pada: https://icme.hpc.msstate.edu/mediawiki/index.php/Fatigue_Life_Prediction_of_Aluminum_Alloy_6063_for_Vertical_Axis_Wind_Turbine_Bla plication.html (Diakses: 18 Januari 2022).
- Kessler, M., Suenger, S., Haubold, M. dan Zaeh, M.F., 2016, Modeling of upset and torsional moment during inertia friction welding, *Journal of Materials Processing Technology*, 227, hal. 34–40. doi:10.1016/j.jmatprotec.2015.07.024.
- Kimura, M., Kusaka, M., Seo, K. dan Fuji, A., 2005, Joining phenomena during friction stage of A7075-T6 aluminium alloy friction weld, *Science and Technology of Welding and Joining*, 10(3), hal. 378–384. doi:10.1179/174329305X40723.



- Kimura, M., Sakaguchi, H., Kusaka, M., Kaizu, K. dan Takahashi, T., 2015, Characteristics of Friction Welding Between Solid Bar of 6061 Al Alloy and Pipe of Al-Si12CuNi Al Cast Alloy, *Journal of Materials Engineering and Performance*, 24(11), hal. 4551–4560. doi:10.1007/s11665-015-1735-3.
- Kou, S., 2002, *Metallurgy Second Edition Welding Metallurgy*. 2nd ed., New Jersey: John Wiley & Sons.
- Kou, S., 2003, *Welding Metallurgy*. 2nd ed, *Indian Welding Journal*. 2nd ed. New Jersey: John Wiley & Sons. doi:10.22486/iwj.v4i3.150243.
- LAMET, Adams, J.H., Ammons, M., Avery, H.S., Barnhurst, R.J. dan Bean, J.C., 1990, *Properties and Selection : Nonferrous Alloys and Special-Purpose Materials*. 10th ed., Metals Park, Ohio: ASM International.
- Lancaster, J.F., 1999, *Metallurgy of welding Sixth Edition*. 6th ed., Cambridge: Woodhead Publishing.
- Lee, I., Kim, H., Park, C., Hong, D. dan Kang, H., 2013, The friction welding characteristic analysis of the Al 7075-T6 according to the spindle speed and upset pressure, *Advanced Materials Research*, 693, hal. 2647–2650. doi:10.4028/www.scientific.net/AMR.690-693.2647.
- Lee, W.S. dan Lin, C.R., 2016, Deformation behavior and microstructural evolution of 7075-T6 aluminum alloy at cryogenic temperatures, *Cryogenics*, 79, hal. 26–34. doi:10.1016/j.cryogenics.2016.07.007.
- Leggatt, R.H., 2008, Residual stresses in welded structures, *International Journal of Pressure Vessels and Piping*, 85, hal. 144–151. doi:10.1016/j.ijpvp.2007.10.004.
- Lezaack, M.B. dan Simar, A., 2021, Avoiding abnormal grain growth in thick 7XXX aluminium alloy friction stir welds during T6 post heat treatments, *Materials Science & Engineering A*, 807(January), hal. 140901. doi:10.1016/j.msea.2021.140901.
- Li, P., Wang, S., Xia, Y., Hao, X., Lei, Z. dan Dong, H., 2020, Inhomogeneous microstructure and mechanical properties of rotary friction welded AA2024 joints, *Journal of Materials Research and Technology*, 9(3), hal. 5749–5760. doi:10.1016/j.jmrt.2020.03.100.
- Li, W. Vairis, Achilles., Preuss, Michael., Ma, Tiejun., Li, Wenya., Vairis, Achilles., Preuss, Michael., Ma, Tiejun., 2016, Linear and rotary friction welding review Linear and rotary friction welding review, *International Materials Reviews*, 61(2), hal. 71–100. doi:10.1080/09506608.2015.1109214.
- Lu, D., You, G., Luo, J., Ding, Y., Zeng, S. dan Tong, X., 2020, Effects of rotational speed on microstructure and mechanical properties of inertia friction-welded 7005–5083 aluminum alloy joints, *Journal of Materials Science*, 55(26), hal. 12338–12352. doi:10.1007/s10853-020-04804-2.
- Luijendijk, T., 2000, Welding of dissimilar aluminium alloys, *Journal of Materials Processing Technology*, 103(1), hal. 29–35. doi:10.1016/S0924-0136(00)00415-5.
- Malopheyev, S. dan Kaibyshev, R., 2014, Strengthening mechanisms in a Zr-modified 5083 alloy deformed to high strains, *Materials Science & Engineering A*, 620(12), hal. 246–252. doi:10.1016/j.msea.2014.10.030.



- Mandal, N.R., 2005, *Aluminum welding*. 2nd ed., New Delhi: Narosa Publishing House.
- Mercan, S., Aydin, S. dan Ozdemir, N., 2015, Effect of welding parameters on the fatigue properties of dissimilar AISI 2205 – AISI 1020 joined by friction welding, *International Journal of Fatigue*, 81, hal. 78–90. doi:10.1016/j.ijfatigue.2015.07.023.
- Moat, R.J., Hughes, D.J., Steuwer, A., Iqbal, N., Preuss, M. dan Bray, S.E., 2009, Residual Stresses in Inertia Friction Welded Dissimilar High Strength Steels, *Metallurgical and Materials Transactions A*, 40(A), hal. 2098–2108. doi:10.1007/s11661-009-9915-0.
- Monteiro, W.A., 2014, *Light Metal Alloys Applications*. 1st ed, *Light Metal Alloys Applications*. 1st ed. Diedit oleh W.A. Monteiro. Books on Demand. doi:10.5772/57069.
- Moravec, J., Sobotka, J., Solfronk, P. dan Thakral, R., 2020, Heat input influence on the fatigue life of welds from steel S460MC, *Metals*, 10(10), hal. 1–14. doi:10.3390/met10101288.
- Muslih, M.R., Sutiarso, Yatno, Suparno, N. dan Sairun, 2007, Neutron Diffractometer for Residual Stress, *Neutron News*, 18(1), hal. 19–23. doi:doi.org/10.1080/10448630601148094.
- Ochi, H., Sawai, T., Yamamoto, Y., Kurita, M. dan Ogawa, K., 2002, Evaluation of Tensile Strength and Fatigue Strength of 6061 Aluminum Alloy Friction Welded Joint, *Materials Science Research International*, 8(3), hal. 156–161.
- Ochi, H., Yamamoto, Y., Yamazaki, T., Sawai, T., Kawai, G. dan Ogawa, K., 2008, Evaluation of Tensile Strength and Fatigue Strength of Commercial Pure Aluminum / Tough Pitch Copper Friction-Welded Joints by Deformation Heat Input * 1, *Materials Transactions*, 49(12), hal. 2786–2791. doi:10.2320/matertrans.L-MRA2008836.
- Ogawa, K., Yamaguchi, H., Yamamoto, Y. dan Kitaura, K., 1994, Bending and torsional strength of friction welded joint of 7075 aluminum, *Light metal*, 44(5), hal. 305–310. doi:10.2464/JILM.44.305.
- Ohue, Y., Morikawa, K., Ogawa, K. dan Nakayama, H., 2002, Tensile and fatigue strength of friction welded joints between 6061 aluminum alloy and S35C carbon steel, *Journal of Japan Institute of Light Metals*, 52(5), hal. 204–209. doi:10.2464/jilm.52.204.
- Omer, K. Abolhasani, Atekeh., Kim, Samuel., Nikdejad, Tirdad., Butcher, Clifford., Wells, Mary
- Esmaeili, Shahrzad., Worswick, Michael., 2018, Process parameters for hot stamping of AA7075 and D-7xxx to achieve high performance aged products, *Journal of Materials Processing Technology*, 257(2010), hal. 170–179. doi:10.1016/j.jmatprotec.2018.02.039.
- Onat, A., 2018, Effects of artificial aging heat treatment on mechanical properties and corrosion behaviour of AA6XXX aluminium alloys, *Journal of Chemical Engineering and Materials Science*, 9(2), hal. 9–16. doi:10.5897/jcems2018.0319.
- Özdemir, N., 2005, Investigation of the mechanical properties of friction-welded joints between AISI 304L and AISI 4340 steel as a function rotational speed,



- materials letters*, 59, hal. 2504–2509. doi:10.1016/j.matlet.2005.03.034.
- Park, J.K. dan Ardell, A.J., 1983, Microstructures of the commercial 7075 Al alloy in the T651 and T7 tempers, *Metallurgical Transactions A*, 14(10), hal. 1957–1965. doi:10.1007/BF02662363.
- Piro, M.H., Sunderland, S. dan Livingstone, S., 2017, *Reference Module in Materials Science and Materials Engineering*. 1st ed., Diedit oleh Saleem Hashmi. Dublin, Ireland: Elsevier. doi:10.1016/B978-0-12-803581-8.09799-X.
- Pook, L., 2007, *Metal fatigue what it is, Why it matters, Solid Mechanics and its Applications*. Diedit oleh G.M.L. GLADWELL. Dordrecht, The Netherlands.: Springer Verlag.
- Pratihar, S., Turski, M., Edwards, L. dan Bouchard, P.J., 2009, Neutron diffraction residual stress measurements in a 316L stainless steel bead-on-plate weld specimen, *International Journal of Pressure Vessels and Piping*, 86(1), hal. 13–19. doi:10.1016/j.ijppv.2008.11.010.
- Preuss, M., Pang, J.W.L., Withers, P.J. dan Baxter, G.J., 2002, Inertia Welding Nickel-Based Superalloy : Part II . Residual Stress Characterization, *Metallurgical and Materials Transactions A*, 33A, hal. 3227.
- Rafi, H.K., Ram, G.D.J., Phanikumar, G. dan Rao, K.P., 2010, Microstructure and tensile properties of friction welded aluminum alloy AA7075-T6, *Materials and Design*, 31(5), hal. 2375–2380. doi:10.1016/j.matdes.2009.11.065.
- Rajaa, S.M., Abdulhadi, H.A., Jabur, K.S. dan Mohammed, G.R., 2018, Aging Time Effects on the Mechanical Properties of Al 6061-T6 Alloy, *Engineering, Technology & Applied Science Research*, 8(4), hal. 3113–3115. doi:10.48084/etasr.2102.
- Robert W. Messler, J., 2004, *Principles of Welding: Processes, Physics, Chemistry, and Metallurgy*. 2nd ed., weinheim: John Wiley & Sons.
- Romhanji, E., 2008, Characterization of microstructural changes in an Al-6 . 8 wt .% Mg alloy by electrical resistivity measurements, *Materials Science and Engineering A*, 492, hal. 460–467. doi:10.1016/j.msea.2008.04.001.
- Rößler, C., Schmicker, D., Naumenko, K. dan Woschke, E., 2018, Adaption of a CARREAU fluid law formulation for residual stress determination in rotary friction welds, *Journal of Materials Processing Tech.*, 252(September 2017), hal. 567–572. doi:10.1016/j.jmatprotec.2017.10.018.
- Sahin, M., 2009, Joining of stainless-steel and aluminium materials by friction welding, *International Journal of Advanced Manufacturing Technology*, 41(5–6), hal. 487–497. doi:10.1007/s00170-008-1492-7.
- Sahin, M. dan Misirli, C., 2013, Mechanical and Metallurgical Properties of Friction Welded Aluminium Joints, *InTech*, hal. 277–300. doi:66EAC9B997126CF3D248DC36CF325281.
- Sammaiah, P., Suresh, A. dan Tagore, G.R.N., 2010, Mechanical properties of friction welded 6063 aluminum alloy and austenitic stainless steel, *Journal of Materials Science*, 45(20), hal. 5512–5521. doi:10.1007/s10853-010-4609-y.
- Sato, Y.S., Kokawa, H., Enomoto, M. dan Jogan, S., 1999, Microstructural evolution of 6063 aluminum during friction-stir welding, *Metallurgical and*



- Materials Transactions A: Physical Metallurgy and Materials Science*, 30(9), hal. 2429–2437. doi:10.1007/s11661-999-0251-1.
- Sawai, T., Ochi, H., Yamamoto, Y., Ogawa, K. dan Suga, Y., 2001, Evaluation of Joint Strength of 6061 Aluminum Alloy Joint Welded Under Inertia Type Friction Welding by Heat Input and Burn-Off Length, *International Offshore and Polar Engineering Conference*, IV, hal. 277–281.
- Sawai, T., Ogawa, K., Yamaguchi, H., Ochi, H., Yamamoto, Y. dan Suga, Y., 2003, Effects of upset timing on heat input and joint strength in friction welding of a 6061 aluminum alloy, *Keikinzoku/Journal of Japan Institute of Light Metals*, 53(2), hal. 43–49. doi:10.2464/jilm.53.43.
- Selamat, N.F.M., Baghdadi, A.H., Sajuri, Z. dan Kokabi, A.H., 2016, Friction stir welding of similar and dissimilar aluminium alloys for automotive applications, *International Journal of Automotive and Mechanical Engineering*, 13(2), hal. 3401–3412. doi:10.15282/ijame.13.2.2016.9.0281.
- Seli, H., Ismail, A.I.M., Rachman, E. dan Ahmad, Z.A., 2010, Mechanical evaluation and thermal modelling of friction welding of mild steel and aluminium, *Journal of Materials Processing Technology*, 210(9), hal. 1209–1216. doi:10.1016/j.jmatprotec.2010.03.007.
- Selvamani, S.T. dan Palanikumar, K., 2014, Optimizing the friction welding parameters to attain maximum tensile strength in AISI 1035 grade carbon steel rods, *Measurement: Journal of the International Measurement Confederation*, 53, hal. 10–21. doi:10.1016/j.measurement.2014.03.008.
- Serag, M., Nasser, A.A. dan Moustafa, A.A., 1981, Elsevier Sequoia S.A., Lausanne - Printed in The Netherlands 227, 70, hal. 227–241.
- Shen, J. Chen, X., Hammond, V., Kecskes, L J., Mathaudhu, S N., Kondoh, K., Wei, Q., 2017, The effect of rolling on the microstructure and compression behavior of AA5083 subjected to large-scale ECAE, *Journal of Alloys and Compounds* [Preprint]. doi:10.1016/j.jallcom.2016.11.406.
- Shinde, G., Mulani, S., Gunavant, P. dan Suryawanshi, A., 2018, Experimental Investigation of Friction Welding on Aluminium AA5083 Alloy, *Proceedings of First International Conference on Energy and Environment: Global Challenges*, hal. 1–4.
- Shinoda, T., Ishikawa, K. dan Takegami, H., 2005, Positioning-controlled friction welding of a 6061 aluminum alloy, *Journal of Japan Institute of Light Metals*, 55(5), hal. 210–215. doi:10.2464/jilm.55.210.
- Siqueira, A.F., Baptista, C.A.R.P., Guimarães, O.L.C. dan Ruckert, C.O.F.T., 2010, Describing the total fatigue crack growth curves for aluminum alloys with an exponential equation, *Procedia Engineering*, 2(1), hal. 1905–1914. doi:10.1016/j.proeng.2010.03.205.
- Smallman, R.E. dan Ngan, A.H.W., 2013, *Modern Physical Metallurgy: Eighth Edition*, *Modern Physical Metallurgy: Eighth Edition*. doi:10.1016/C2011-0-05565-5.
- Smith, W.F., Hashemi, J. dan Presuel-Moreno, F., 2019, *Foundations of Materials Science and Engineering*. 6 ed, *Foundations of Materials Science and Engineering*. 6 ed. New York: McGraw-Hill Inc.
- Somiya, S., 2013, *Handbook of Advanced Ceramics: Materials, Applications*,



- Processing, and Properties: Second Edition, Handbook of Advanced Ceramics: Materials, Applications, Processing, and Properties: Second Edition.* doi:10.1016/C2010-0-66261-4.
- Sonomura, H., Ozaki, T., Katagiri, K., Hasegawa, Y. dan Tanaka, T., 2019, Interface microstructure observation for welds of an alumina ceramics and an aluminum alloy with friction stir spot welding, *Journal of the Ceramic Society of Japan*, 127(2), hal. 127–130. doi:10.2109/jcersj2.18106.
- Su, J.Q., Nelson, T.W., Mishra, R. dan Mahoney, M., 2003, Microstructural investigation of friction stir welded 7050-T651 aluminium, *Acta Materialia*, 51(3), hal. 713–729. doi:10.1016/S1359-6454(02)00449-4.
- Sued, M.K., Pons, D., Lavroff, J. dan Wong, E.H., 2014, Design features for bobbin friction stir welding tools: Development of a conceptual model linking the underlying physics to the production process, *Materials and Design*, 54, hal. 632–643. doi:10.1016/j.matdes.2013.08.057.
- Summers, P.T. Tech, Virginia., Case, Scott W., Tech, Virginia., Tech, Virginia., Lattimer, Brian., Tech, Virginia., 2012, Post-fire Mechanical Properties and hardness of 5083 and 6082 aluminium alloys,in *Proceedings of the ASME 2012 International Mechanical Engineering Congress & Exposition*. Texas: ASME, hal. 1–9. Tersedia pada: <http://proceedings.asmedigitalcollection.asme.org>.
- Summers, P.T., Case, S.W. dan Lattimer, B.Y., 2014, Residual mechanical properties of aluminum alloys AA5083-H116 and AA6061-T651 after fire, *Engineering Structures*, 76, hal. 49–61. doi:10.1016/j.engstruct.2014.06.033.
- Summers, P.T., Mouritz, A.P., Case, S.W. dan Lattimer, B.Y., 2015, Microstructure-based modeling of residual yield strength and strain hardening after fire exposure of aluminum alloy 5083-H116, *Materials Science & Engineering A*, 632, hal. 14–28. doi:10.1016/j.msea.2015.02.026.
- Taban, E., Gould, J.E. dan Lippold, J.C., 2010, Dissimilar friction welding of 6061-T6 aluminum and AISI 1018 steel: Properties and microstructural characterization, *Materials and Design*, 31(5), hal. 2305–2311. doi:10.1016/j.matdes.2009.12.010.
- Tamadon, A., Pons, D.J., Sued, K. dan Clucas, D., 2018, Thermomechanical grain refinement in AA6082-T6 thin plates under bobbin friction stir welding, *Metals*, 8(6), hal. 1–20. doi:10.3390/met8060375.
- Tekeli, S., Simsek, I., Simsek, D. dan Ozyurek, D., 2019, Effects of Different Solid Solution Temperatures on Microstructure and Mechanical Properties of the AA7075 Alloy after T6 Heat Treatment, *High Temperature Materials and Processes*, 38(2019), hal. 892–896. doi:10.1515/htmp-2019-0050.
- Teker, T., Soysal, T. dan Akgün, G., 2021, Effect of rotary friction welding on mechanical properties of 6060 Al alloy, *Revista de Metalurgia*, 57(December). doi:<https://doi.org/10.3989/revmetalm.206>.
- Thaddeus B. Massalski, E., 1986, *Binary Alloy Phase Diagrams*. 2nd ed., Metals Park, OH: ASM International.
- Tsujino, R., Kawai, G., Ochi, H., Yamaguchi, H., Ogawa, K. dan Yamamoto, Y., 2014, Statistical analysis of optimum friction welding conditions for 6061



- aluminium alloy friction-welded joints Statistical analysis of optimum friction welding conditions for 6061 aluminium alloy friction-welded joints, *Welding International*, 19(1), hal. 19–22. doi:10.1533/wint.2005.3349.
- TWI, 2022, *Rotary friction welding*,. Tersedia pada: <https://www.twi-global.com/technical-knowledge/job-knowledge/rotary-friction-welding-148>.
- Uday, M.B., Ahmad Fauzi, M.N., Zuhailawati, H. dan Ismail, A.B., 2011, Evaluation of interfacial bonding in dissimilar materials of YSZ-alumina composites to 6061 aluminium alloy using friction welding, *Materials Science and Engineering A*, 528(3), hal. 1348–1359. doi:10.1016/j.msea.2010.10.060.
- Vandermeer, R.A. dan Hansen, N., 2008, Recovery kinetics of nanostructured aluminum : Model and experiment, *Acta Materialia*, 56(19), hal. 5717–5725. doi:10.1016/j.actamat.2008.07.038.
- Vargel, C., Jacques, M. dan Schmidt, M.P., 2004, *Corrosion of Aluminium, Corrosion of Aluminium*. doi:10.1016/B978-008044495-6/50012-4.
- Wang, L., Preuss, M., Withers, P., Baxter, G.. dan P.Wilson, 2004, Residual Stress Prediction for the Inertia Welding Process, *Neutron Research*, 12(1–3), hal. 21–25.
- Withers, P.J., 2007, Mapping residual and internal stress in materials by neutron diffraction, 8, hal. 806–820. doi:10.1016/j.crhy.2007.09.015.
- Yamamoto, Y., Ochi, H., Sawai, T., Yamaguchi, H. dan Ogawa, K., 2007, Fatigue strength of friction-welded 6061 aluminum alloy joints, *Materials Transactions*, 48(11), hal. 2909–2913. doi:10.2320/matertrans.L-MRA2007880.
- Yang, J., Li, J., Dong, D. dan Liao, J., 2019, Effect of welding parameters on microstructure and high temperature tensile properties of FGH96 superalloy inertial friction welded joints, *Journal of Aeronautical Materials*, 39(2), hal. 33–41. doi:10.11868/j.issn.1005-5053.2018.000141.
- Yu, M. Ha, Hyunsu., Kim, Taehyoung., Lee, Dohee., Kim, Yonjig., Kim, Cheolsang., Hong, Dongpyo., 2011, Tensile property for friction welded aluminum alloy 7075-T6 and 7075-T6, *Advanced Materials Research*, 297, hal. 1925–1928. doi:10.4028/www.scientific.net/AMR.295-297.1925.
- Zhang, C. Huang, Guangjie., Cao, Yu., Zhu, Yulong., Huang, Xinde., Zhou, Yi., Li, Qilei., Zeng, Qinghui., Liu, Qing., 2020, Microstructure evolution of thermo-mechanically affected zone in dissimilar AA2024/7075 joint produced by friction stir welding, *Vacuum*, 179, hal. 1–24. doi:10.1016/j.vacuum.2020.109515.



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ALUMINIUM PADUAN AA5083-H112, AA6061-T6 DAN AA7075-T6

AGUS SASMITO, Prof. Ir. M. Noer Ilman, S.T., M.Sc., Ph.D., IPM., ASEAN Eng.

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