

DAFTAR PUSTAKA

- Abdel, A.U., dan Mahmoud, A.A., 2019, Comparison Between Different Types of Chemical Coagulants Used In Water Purification, *Engineering Research Journal*, **1**(41): 89-93. <https://doi.org/10.1016/j.chemosphere.2020.128005>
- Aditya, R.V., Budiyono., dan Joko,T., 2022, Penggunaan PAC dalam Menurunkan Kadar BOD Limbah Cair di RPH Penggaron, *Jurnal Ilmu Kesehatan Masyarakat*, **18**(4): 1-6. DOI:[10.19184/ikesma.v18i4.30305](https://doi.org/10.19184/ikesma.v18i4.30305)
- Afiatun, E., Pradiko, H., Wahyuni, S., dan Pamungkas, OF ,2021, Analisis modifikasi proses sedimentasi pada pengolahan air skala komunal dengan teknik elektrokoagulasi. Seri Konferensi IOP: *Ilmu Bumi dan Lingkungan*, **802**(1). <https://doi.org/10.1088/1755-1315/802/1/012044>
- Agusta, H., Putra, A.M., Advenia, D., Kurniawati, N., dan Surawan, T., 2022, Sintesis Poly Aluminium Chloride (PAC) dengan Variasi pH dari Limbah Kaleng Minuman Sebagai Penjernih Air, *Jurnal Teknologi*, **9**(2): 134-142. DOI: <https://doi.org/10.31479/jitek.v9i2.146>
- Andriani, F., Darundiati, Y.H., dan Dangiran, H.L., 2017, Efektivitas Pac (Poly Aluminium Chloride) Dalam Menurunkan Kadar Fosfat Pada Limbah Cair Rumah Sakit Jiwa Prof. Dr. Soerojo Magelang, *Jurnal Kesehatan Masyarakat (e-Journal)*, **5**(5): 659–665. <http://repositori.usu.ac.id/handle/123456789/5786>
- Arsita, A., Andrie., dan Hakim., 2024, Optimization of PAC (Poly Aluminium Chloride) Dosage in Clean Water Treatment Process at PDAM Tirta Bantimurung Using the Jar Test Method, *Journal Industrial Engineering and Managemenet*, **5**(2): 149-153. DOI:[10.47398/justme.v5i02.85](https://doi.org/10.47398/justme.v5i02.85)
- Artiningrum, T., dan Filiceldi, M., 2023, Efectiveness of Poly Aluminium Chloride Coagulant on tge Performance of IPAM Badaksinga, *Journal of Universal Studies*, **3**(1): 180-190. DOI:[10.36418/eduvest.v3i1.725](https://doi.org/10.36418/eduvest.v3i1.725)
- Avila, G.F., et.al, 2025, Comparative analysis of coagulants for selective removal of iron and aluminum from galvanic wastewater: A practical and effective approach, *Ain Shams Engineering Journal*, **16**(7): 103-393. <https://doi.org/10.1016/j.asej.2025.103393>
- Badan Standardisasi Nasional. 2009. SNI 6989.34:2009. *Air dan Air Limbah – Bagian 34: Cara Uji Aluminium (Al) secara Spektrofotometri Serapan Atom (SSA) – Nyala*. BSN: Jakarta.
- Badan Standardisasi Nasional. 2004. SNI 06-6989.14-2004. *Air dan Air Limbah – Bagian 14: Cara Uji BOD (Biochemical Oxygen Demand)*. BSN: Jakarta.
- Badan Standardisasi Nasional. 2009. SNI 6989.72:2009. *Air dan Air Limbah – Bagian 72: Cara Uji Iodometri (Tiosulfat) untuk Penentuan Oksigen Terlarut (DO)*. BSN: Jakarta.
- Badan Standardisasi Nasional. 2005. SNI 06-6989.25-2005. *Air dan Air Limbah –*

Bagian 25: Cara Uji Kekeruhan dengan Turbidimeter. BSN: Jakarta.

- Bakri, B., Selintung, M., Nahmadi, R.N., Ihsan, M., dan Arai, Y., 2019, The Effectiveness of PAC and Chitosan Usage in Jeneberang River Raw Water Treatment, *Journal Science and Engineering*, **6**(7): 1-6. DOI:[10.1088/1757-899X/676/1/012028](https://doi.org/10.1088/1757-899X/676/1/012028)
- Budiman, A., Wahyudi, C., Irawati, W., dan Hindarso, H., 2017, Kinerja Koagulan Poly Aluminium Chloride (PAC) Dalam Penjernihan Air Sungai Kalimas Surabaya Menjadi Air Bersih, *Jurnal Teknik*, **7**(1): 25–34. DOI: [10.33508/wt.v7i1.1258](https://doi.org/10.33508/wt.v7i1.1258)
- Carnevale M.M., Torretta, V., Repková, M., Hlavínek, P., dan Telek, J., 2025, Treatment of a Real Brewery Wastewater with Coagulation and Flocculation: Impact on Organic Substance and Nutrient Concentrations, *Applied Sciences*, **15**(6):2999. <https://doi.org/10.3390/app15062999>
- Chefany, H.F., Nugroho, M.R., Jannah, R.R., Annisa, U., dan Fatmawati, 2024, Ketersediaan Air Bersih dan Kondisi Iklim, *Jurnal Pendidikan Sosial dan Humaniora*, **3**(4): 5185-5201.
- Daryabeigi, Z.A., dan Hoveidi, H., 2015, Comparing aluminium sulfate and poly-aluminium chloride (PAC) performance in turbidity removal from synthetic water, *Journal of Applied Biotechnology Reports*, **2**(3): 287–292. DOI:[10.31851/sainmatika.v2i1i.13749](https://doi.org/10.31851/sainmatika.v2i1i.13749)
- Dwidewitra, P.R., Huda, M.M., dan Rachmanto, A.T., 2024, Pengaruh Konsentrasi Koagulan Terhadap Proses Pengolahan Air Di PDAM Surya Sembada Kota Surabaya, *Jurnal Teknik*, **2**(2): 145-153. DOI:[10.61132/globe.v2i2.313](https://doi.org/10.61132/globe.v2i2.313)
- El, J., et al., 2023. Optimizing Removal of Chromium (VI) Ions from Water by Coagulation Process Using Central Composite Design: Effectiveness of Grape Seed as a Green Coagulant. *Separation and Purification Technology* 307, 122-805. <https://doi.org/10.1016/j.seppur.2022.122805>
- Ernando, D., Fitriani, H., dan Hadinata, F., 2024, Comparative Analysis of Water Network Demand and Development with the Availability of Clean Water in the Regional Drinking Water Company Lematang Enim, *Journal of Universal Studies*, **4**(4): 1851-1874. DOI:[10.59188/eduvest.v4i4.1191](https://doi.org/10.59188/eduvest.v4i4.1191)
- Farajnezhad, H., dan Gharbani, P., 2018, Coagulation Treatment of Wastewater in Petroleum Industry Using Poly Aluminum Chloride and Ferric Chloride, *Ijrras*, **13**(1): 306-310.
- Geick, P.H. 2022. *Progress On Household Drinking Water, Sanitation, and Hygiene 2000-2020*. 978-92-4-003084-8
- Gkotsis, P., Mitrakas, M., dan Zouboulis, A., 2023, A Novel Process For the On-Site Preparation and Application of Polyferric Chloride For Surface Water Treatment, *Journal Sustainability*, **15**(5):164 170. <https://doi.org/10.3390/su152316416>

- Ghony, M. A., Jessika, J., dan Hariyadi, A., 2024. *Pengaruh Penggunaan Chemical Poly Aluminium Chloride (PAC) dan Polyacrylamide (PAM) terhadap Proses Penjernihan Air di Purifier PLTU Tanjung Enim PT. BEST 3 × 10 MW*. Jurnal Ilmiah Teknik dan Sains (JITS), **1**(3): 147–153. DOI: <https://doi.org/10.62278/jits.v1i3.26>
- Husaini, H., Cahyono, S.S., Suganal, S., dan Hidayat, K.N., 2018, *Perbandingan koagulan hasil percobaan dengan koagulan komersial menggunakan metode jar test*, Jurnal Teknologi Mineral dan Batubara, **14**(1): 31–45. DOI: <https://doi.org/10.30556/jtmb.Vol14.No1.2018.387>
- Kassa, E.A., Shibeshi, T.N., dan Tizazu, Z.B., 2024, Synthesis of Polyaluminium Chloride Optimization of Process Parameters, Characterization and Performance Investigation For Water Treatment, *Journal of Water Process Engineering*, **5**(7): 1-26. <https://doi.org/10.1016/j.jwpe.2023.104700>
- Kementerian Kesehatan Republik Indonesia, 2023, *Peraturan Menteri Kesehatan Republik Indonesia Nomor 2 Tahun 2023 tentang Peraturan Pelaksanaan Kesehatan Lingkungan*, Jakarta: Kementerian Kesehatan RI.
- Komala, R., Subroto, Sisnayanti, Dwipayana, H., dan Nurlela., 2024, Perbandingan Koagulan Tawas dan Poli Aluminium Klorida Kinerja terhadap Kekeruhan dan pH Air Baku PDAM Lematang Enim, *Jurnal Ilmiah Matematika dan Ilmu Pengetahuan Alam* **21**(1): 30-38. <https://doi.org/10.31851/REDOKS.V6I2.5841>
- Krupinska, I., Ewelina., dan Gagala, S., 2019, Residual Aluminium In Water Intended For Human Consumption, *Sciendo*, **29**(4): 248-256. DOI: 10.2478/ceer-2019-0058
- Lestari, N., dan Indriani, D., 2022, Identifikasi Pola Kepemilikan Sumber Air Minum Rumah Tangga di Jawa Timur, *Jurnal Media Gizi Kesmas*, **11**(1): 88-94. DOI: **10.20473/mgk.v11i1.2022.88-94**
- Lia, F., Jiang, Q.J., Wu, S., dan zhang, B., 2016, Preparation and Performance of a High Purity Poly-Aluminium Chloride, *Chemical Engineering Journal*, **156**(1): 64-69. DOI: [10.1038/s41467-018-03156-5](https://doi.org/10.1038/s41467-018-03156-5)
- Liu, S., Zhuang, X., dan Wang, C., 2021, Aplikasi polialuminium koagulan klorida di sungai perkotaan pengolahan air mempengaruhi komunitas mikroba di sungai sedimen, *Air (Swiss)*, **13**(13). <https://doi.org/10.1016/j.inoche.2025.114885>
- Maraschin M., Hedlund K.F.F., dan Carissimi E., 2020, Acidification and flocculation of sludge from a water treatment plant: New action mechanisms, *Separation and Purification Technology*, **25**(2): 117-417. <https://doi.org/10.1016/j.seppur.2020.117417>
- Martina, A., Effendy, S.D., dan Soetedjo, N.J., 2018, Aplikasi Koagulan Biji Asam Jawa dalam Penurunan Konsentrasi Zat Warna pada Limbah Tekstil Sintetik pada Berbagai Variasi Operasi, *Jurnal Rekayasa Proses*, **12**(2): 98-

103. <https://doi.org/10.22146/jrekpros.38948>
- Matilainen, A., Vepsäläinen, M., dan Sillanpää, M., 2010, Natural organic matter removal by coagulation during drinking water treatment: A review. *Advances in Colloid and Interface Science*, **159**: 189–197. <https://doi.org/10.1016/j.cis.2010.06.007>
- Mekonnen, M.M., dan Hoekstra, A.Y. 2021. Four Billion People Facing Severe Water Scarcity. *Sciences Advances*. **7**(3): 1-6. DOI: [10.1126/sciadv.1500323](https://doi.org/10.1126/sciadv.1500323)
- Mubarak., dan Firmansyah., 2024, Sustainability Aspects in Water Management Policies in Regional Drinking Water Companies, *Journal Public Accounting and Sustainability*, **1**(1): 19-33. DOI: <https://doi.org/10.18196/pas.v1i1.7>
- Mutakhabbatillah., Mahendra, R., Chumaidi, A., dan Kusuma, M.R., 2022, Efektivitas Koagulan Kitosan Pada Pengolahan Air Di Unit Water Treatment Ppsdm Migas Cepu, *Jurnal Teknologi Separasi*, **8**(3): 595-603. DOI: [10.33795/distilat.v8i3.396](https://doi.org/10.33795/distilat.v8i3.396)
- Nisa, N. I. F., dan Aminudin, A., 2019. *Pengaruh Penambahan Dosis Koagulan terhadap Parameter Kualitas Air dengan Metode Jartest*. *Jurnal Riset Sains dan Teknologi*, **3**(2): 61–67. DOI: [10.30595/jrst.v3i2.4500](https://doi.org/10.30595/jrst.v3i2.4500)
- Nur, M.F.M., H, N.P., dan Ningsih, E, 2020, Kombinasi Koagulan dan Flokulan dalam Pengolahan Air Limbah Industri Farmasi, *Seminar Nasional Sains Dan Teknologi Terapan VII*, 339–344.
- Nurjulasti, N., Andriyani, R., dan Hidayat, M, 2024, *Manajemen dan Inovasi Pengelolaan Air Bersih oleh PDAM di Indonesia*. Jakarta: Penerbit Air Sejahtera.
- Pradiani, W., Andriana, H., dan Suningrat, A.Y., 2022, *Efektivitas Koagulan terhadap Penurunan Energi Potensial pada Pengolahan Air di PDAM Tirta Pakuan Kota Bogor*. *Jurnal Integrasi*, **7**(1), 32–41. DOI: [10.32502/jis.v7i1.4464](https://doi.org/10.32502/jis.v7i1.4464)
- Pratiwi, N., 2020, *Pengaruh dosis koagulan terhadap penurunan kekeruhan dan logam pada proses koagulasi-flokulasi*, *Jurnal Sains dan Teknologi Lingkungan*, **8**(1): 45–53.
- Putri, A.E., Rahayu, D.R., Maryanty, Y., dan Hidayat, V., 2023, Analisis Penggunaan Koagulan pada Pengolahan Hard Water dengan Metode Koagulasi Flokuladi di PT Petrokimia Gresik, *Jurnal Teknologi Separesi*, **10**(3): 524-553.
- Putra, R., Lebu, B., Munthe, D., dan Rambe, M.A., 2013, Pemanfaatan Biji Kelor Sebagai Koagulan pada Proses Koagulasi Limbah Cair Industri Tahu dengan Menggunakan Jar Test, *Jurnal Teknik Kimia*, **2**(2): 28-31. DOI: [10.32734/jtk.v2i2.1435](https://doi.org/10.32734/jtk.v2i2.1435)
- Riva, F.A., Sumiyanti, S., dan Sarminingsih, A., 2022, Pengaruh Variasi PAC, Soda Ash dan Polimer terhadap Penyisihan pH dan Warna pada Unit Instalasi

- Pengolahan Air Minum di Pekanbaru, *Jurnal Ilmu Lingkungan*, **20**(4): 769-776. DOI:[10.31602/ann.v10i2.13081](https://doi.org/10.31602/ann.v10i2.13081)
- Rohana, H., dan Irwanto, R.A., 2023, Utilization of *Abelmoschus manihot* L. Leaf Extract as a Flocculant for Groundwater Treatment in Environmental Analytical Chemistry Practical Activities, Indonesia *Journal of Laboratory*, **6**(3): 196-204. <https://doi.org/10.22146/ijl.v1i3.91375>
- Sabara, Z., Yani, S., Purnamasari, P., dan Darnengsih, D., 2020, Kualitas Air Sungai Jeneberang Ditinjau dari Lokasi dan Waktu, *Journal of Chemical Process Engineering*, **5**(2): 8-13. DOI:[10.33536/jcpe.v5i2.741](https://doi.org/10.33536/jcpe.v5i2.741)
- Sabillah, I., Adiono, M., Suaebah, E., dan Rohmawati, L., 2025, Efektivitas aluminium sulfat dalam mengurangi kekeruhan air pada uji jar test pt.Hanarida tirta birawasidoarjo, *Jurnal Inovasi Fisika Indonesia*, **14**(1): 21-26. DOI: <https://doi.org/10.26740/ifi.v14n1.p21-26>
- Sablina, E.P., Setiawan, A., dan Afiuddin., 2020, Studi Penggunaan Dosis Koagulan PAC dan Flokulan Polymer Anionic Pada Pengolahan Limbah Cair Industri Air Tahu, *Jurnal Teknik*, **1**(2): 183-188. DOI:[10.30595/jrst.v3i2.4500](https://doi.org/10.30595/jrst.v3i2.4500)
- Sari, A.P., dan Nurdiana., 2017, Pemantauan pH, Kekeruhan Dan Sisa Chlor Air Produksi Di Laboratorium Mini Ipa Cendana Pdam Tirta Kencana Kota Samarinda Kalimantan Timur, *Jurnal Teknologi Lingkungan*, **1**(1): 4–7. DOI: <https://dx.doi.org/10.30872/jtlunmul.v1i2.1572>
- Sasmoko, D., Rasmino, H., dan Rahmadani, A, 2019, Rancang Bangun Sistem Monitoring Kekeruhan Air Berbasis IoT pada Tandon Air Warga, *Jurnal Informatika Upgris*, **5**(1): 25–34. DOI:[10.26877/jiu.v5i1.2993](https://doi.org/10.26877/jiu.v5i1.2993)
- Sillanpaa, M., Ncibi, M. C., Matilainen, A., dan Vepsalainen, M., 2018, Removal of natural organic matter in drinking water treatment by coagulation: A comprehensive review. *Chemosphere*, **190**(1): 54–71. <https://doi.org/10.1016/j.chemosphere.2017.09.113>
- Siregar, A., 2005, *Instalasi Pengolahan Air Limbah*, Kanisius, Yogyakarta.
- Sisnayanti, Winoto.W., Yhopie., dan Aprilianty.w., 2021, perbandingan penggunaan tawas dan PAC terhadap kekeruhan dan pH air baku pdam tirta musi Palembang, *Jurnal Teknit*, **6**(2): 107-116. DOI:[10.33795/distilat.v8i3.404](https://doi.org/10.33795/distilat.v8i3.404)
- Sudoh, R., et.al, 2015, Removal of Dissolved Humic Acid From Water by Coagulation Method Using PAC with Calcium Carbonate as Neutralizer and Coagulant Aid, *Journal of Environmental Chemical Engineering*, **3**(2): 770-774. <https://doi.org/10.1016/j.jece.2015.04.007>
- Sufra, R., et.al, 2024, Intensifikasi Pengolahan Limbah Cair Laboratorium Melalui Proses Koagulasi dan Adsorpsi Studi Pengolahan Limbah Cair Laboratorium dengan Metode Kombinasi Fisika-Kimia, *Jurnal Talenta Sipil*, **79**(1):266-275. DOI: <https://dx.doi.org/10.33087/talentsipil.v7i1.460>

- Tamjidillah, M., Ramadhan, N.M., Anggono, C.A dan Bonazir, R., 2023, Peran Koagulan PAC Pada Pengolahan Air Bersih dan Air Minum Terintegrasi Regional Banjarnegara, *Jurnal Teknik Mesin*, **8**(2): 198-203.
- Tandi, K.F., Kamulyan, B dan Nurrochmad, F., 2023, Analisis Pengaruh Perilaku Masyarakat Terhadap Kualitas Air Baku dan Air Minum PDAM Tirta Handayani Gunung Kidul, *Jurnal Ilmu Pengetahuan dan teknologi sipil*, **7**(2): 1-10.
- Wang, X., 2020, Impacts of Water Scarcity on Economic Growth and Policy Options, *Water Resources Research*, **56**(7): 10-18.
<https://doi.org/10.1016/j.spc.2021.09.006>
- Wicaksana, A.S., Yuningsih, M.L., dan Mulyani, R., 2024, Optimasi Koagulan dan Flokulan pada Proses Water Treatment di PLTU Palabuhanratu, *Jurnal Ilmiah Sains dan Teknologi*, **14**(2): 82-87.
- Zhang, L., Liu, X., Wang, T., Tang, H., dan Jia, Y., 2023, The Effect of pH/PAC the Coagulation of Anionic Surfactant Wastewater Generated in the Cosmetic Production, *Journal of Environmental Chemical Engineering*, **11**(2): 38-47.
<https://doi.org/10.1016/j.ensm.2025.104295>
- Zhao, X.Y., Gao, B.Y., Wang, Y., Shon, K.H., dan Yue, Y.Q., 2012, Coagulation Performance and Floc Characteristics with Polyaluminium Chloride Using Sodium Alginate as Coagulant aid: A Preliminary Assessment, *Chemical Engineering Journal*, **18**(3): 387-394. [doi:10.1016/j.jhazmat.2010.10.084](https://doi.org/10.1016/j.jhazmat.2010.10.084)