REFERENCES

- C. Ghinea and M. Gavrilescu "Costs analysis of municipal solid waste management scenarios: IASI – Romania case study", *Journal of Environmental Engineering and Landscape Management*, vol. 24, no. 3, pp. 185-199, 2016.
- A. Pappu, M. Saxena and S. Asolekar, "Waste to Wealth-Cross Sector Waste Recycling Opportunity and Challenges", *Canadian Journal on Environmental, Construction and Civil Engineering*, vol. 2, no. 3, pp. 14-23. 2011.
- J.W. Anthony, R.A. Bideaux, K.W. Bladh, and M.C. Nichols, Handbook of Mineralogy (I), In. Mineral Data Publishing, Arizona, pp. 588, 1990.
- 4. V. Singh, "Technological innovation in the zinc electrolyte purification process of a hydrometallurgical zinc plant through reduction in zinc dust consumption," *Hydrometallurgy*, vol. 40, no. 1-2, pp. 247–262, 1996.
- V. A. Mymrin and A. V. Vaamonde, "New construction materials from Spanish jarosite processing wastes," *Minerals Engineering*, vol. 12, no. 11, pp. 1399– 1402, 1999.
- J. Hage and R. Schuiling, "Comparative column elution of jarosite waste and its autoclaved product-evidence for the immobilization of deleterious elements in jarosite," *Minerals Engineering*, vol. 13, no. 3, pp. 287–296, 2000.
- S. Acharya, S. Anand and R. Das, "Iron rejection through jarosite precipitation during acid pressure leaching of zinc leach residue", *Hydrometallurgy*, vol. 31, no. 1-2, pp. 101-110, 1992.
- A. Pappu, M. Saxena and S. Asolekar, "Hazardous jarosite use in developing nonhazardous product for engineering application", *Journal of Hazardous Materials*, vol. 137, no. 3, pp. 1589-1599, 2006.
- 9. Mineral Commodity Summaries, "Zinc Statistics and Information," USGS

Minerals Information: Tin. [Online]. Available: <u>https://minerals.usgs.gov/minerals/pubs/commodity/zinc/</u>. [Accessed: 14-Jun-2018].

- 10. C. Arslan, F. Arslan, "Thermochemical review of jarosite and goethite stability regions at 25 and 95 °C", *Turk J Eng Environ Sci*, vol. 27, pp. 45–52, 2003.
- A. Ranjan, R.K. Swami, "Feasibility Study of Use of Jarosite for Road and Embankment Construction", Proceedings of GGWUIP-2013, 110025, pp. 120-122, 2013.
- L. Montanaro, N. Bianchini, J. Rincon, and M. Romero, "Sintering behaviour of pressed red mud wastes from zinc hydrometallurgy," *Ceramics International*, vol. 27, no. 1, pp. 29–37, 2001. <u>http://doi.org/10.1016/j.jclepro.2016.01.015</u>
- J. Lazonby, "Zinc," *The Essential Chemical Industry online*. [Online]. Available: <u>http://www.essentialchemicalindustry.org/metals/zinc.html</u> [Accessed: 14-Jun-2018].
- 14. J. Scott, D. Beydoun, R. Amal, G. Low, and J. Cattle, "Landfill Management, Leachate Generation, and Leach Testing of Solid Wastes in Australia and Overseas," *Critical Reviews in Environmental Science and Technology*, vol. 35, no. 3, pp. 239–332, 2005.
- 15. V. Arregui, A.R. Gordon, G. Steintveit, "The Jarosite Process, Past, Present and Future, Lead-Zinc Tin '80", Eds. J.M. Cigan, T.S. Mackey, and T.J. O'Keefe. TMS of AIME, pp. 97-123, 1979.
- 16. I. Ribeta, C. Ptacek, D. Blowes, and J. Jambor, "The potential for metal release by reductive dissolution of weathered mine tailings," *Journal of Contaminant Hydrology*, vol. 17, no. 3, pp. 239–273, 1995.
- 17. S. Manahan, Environmental Chemistry. 6th Edition, Lewis Publishers CRC

Press. 1994 http://doi.org/10.1016/j.jclepro.2016.01.055

- 18. Hindustan Zinc Limited Home. [Online], Available: http://hzlindia.com/environment.aspx. [Accessed: 14-Jun-2018].
- A.K. Sinha, V.G. Havanagi, A. Ranjan, S. Mathur, and V.K. Arora, "Feasibility study of Jarofix waste material for road construction". Indian geotechnical conference, Kochi, Indian geotechnical society press, New India, vol.1, pp. 685-688. 2011.
- 20. M. Ding, R. Schuiling and H. Sloot, "Self-sealing isolation and immobilization: a geochemical approach to solve the environmental problem of waste acidic jarosite", *Applied Geochemistry*, vol. 17, no. 2, pp. 93-103, 2002.
- 21. A. Davis, L. Eary and S. Helgen, "Assessing the Efficacy of Lime Amendment To Geochemically Stabilize Mine Tailings", *Environmental Science & Technology*, vol. 33, no. 15, pp. 2626-2632, 1999.
- M. Kalwa, M. Grylickin "Utilization of fly ash, a waste from thermal power stations, in manufacture of building materials", *Ceram. Powders*, pp.: 107–109, 1983.
- 23. BIS (1992): 2248, "Glossary of Terms Relating to Clay Products for Buildings, Bureau of Indian Standards", New Delhi.
- A. Pappu, M. Saxena and S. Asolekar, "Recycling hazardous jarosite waste using coal combustion residues", *Materials Characterization*, vol. 61, no. 12, pp. 1342-1355, 2010.
- 25. SW: 846 Test Method-1311. "Toxicity Characteristic Leaching Procedure", US Environmental Protection Agency, 1992.
- 26. M.E. Makhatha, M.O. Ndou, and W. Nheta, "Characterisation of Jarosite, Fly Ash and Clay for their Possible Usage in the Construction Industry". Proceedings of

the World Congress on Mechanical, Chemical, and Material Engineering (MCM 2015), Avestia Publishing, Ottawa Canada, Barcelona, Spain, pp.1-9, 2015.

- D.W. Robinson-todd, Process for Disposal of Ammonium Jarosite, United States Patent no. 217207, pp. 3-4, 1976.
- 28. C. Ek, "Jarosite treatment and, disposal by the 'Jarochaux' process", *Iron Control in Hydrometallurgy*, Toronto, Canada, pp. 719-729, 1986.
- 29. R.L. Levens, A.D. Marcy, and C.M.K. Boldt, "Environmental impacts of cemented mine waste backfill, Report to Investigations 9599", United States Department of the Interior/United States Bureau of Mines, 1996.
- T.T. Chen and J. E. Dutrizac, "A mineralogical study of jarosite products for the stabilization of jarosite residues for disposal". *Lead- Zinc* (Warrendale, PA: TMS), pp. 917-933, 2000.
- S. Seyer, T. Chen and J. Dutrizac, "Jarofix: Addressing iron disposal in the zinc industry," *Jom*, vol. 53, no. 12, pp. 32–35, 2001.
- 32. V. A. Mymrin, H. A. Ponte, and Impinnisi Patrício R., "Potential application of acid jarosite wastes as the main component of construction materials," *Construction and Building Materials*, vol. 19, no. 2, pp. 141–146, 2005. <u>http://doi.org/10.1016/j.cemconcomp.2006.12.005</u>
- 33. J.L.T. Hage, R.D. Schuiling, S.P. Vriend, "Production of magnetite from sodium jarosite under reducing hydrothermal conditions, The reduction of Fe (III) to Fe (II) with cellulose", *Canadian Metallurgical*, Quarterly, 38 (4), pp. 267-276, 1999.
- 34. A. Cheilas, M. Katsioti, A. Georgiades, O. Malliou, C. Teas and E. Haniotakis,
 "Impact of hardening conditions on to stabilized/solidified products of cement–sewage sludge–jarosite/alunite", *Cement and Concrete Composites*, vol. 29, no. 4, pp. 263-269, 2007.

- 35. A.K. Sinha, V.G. Havanagi, V.K. Arora, and S. Mathur, "Design, Construction & Evaluation of Jarofix Embankment and Sub Grade Layers". *International Journal of Environmental Engineering Research*, vol. 1, no. 3, pp. 97-103, 2012.
- 36. A.K. Sinha, V.G. Havanagi, V.K. Arora, and S. Mathur, "Geotechnical Characterization of Jarosite Waste Material for Road Construction". Proceedings of Indian Geotechnical Conference, Roorkee, Indian geotechnical society press, New India, pp. 22-24, 2013.
- 37. J.P. Bombled, "Influence of sulphates on the rheological behavior of cement pastes and on their evolution", Proc 7th Int Cong Cem Chem, Paris, vol. III, Theme VI, pp.:164-169, 1982.
- 38. M. Katsioti, P. Boura, S. Agatzini, P. Tsakiridis, and P. Oustadakis, "Use of jarosite/alunite precipitate as a substitute for gypsum in Portland cement," *Cement* and Concrete Composites, vol. 27, no. 1, pp. 3–9, 2005.
- 39. A.K. Vyas, "Solidification- Stabilization Technique for Metal bearing Solid Waste from Zinc Industry-A case study". Proceeding of International Conference on Environmental and Computer Science (IPCBEE). IACSIT Press, Singapore, vol. 19, pp. 151-155. 2011.
- 40. P. Mehra, R. C. Gupta, and B. S. Thomas, "Assessment of durability characteristics of cement concrete containing jarosite," *Journal of Cleaner Production*, vol. 119, pp. 59–65, 2016. http://doi.org/10.1016/j.jclepro.2016.01.055
- 41. P. Mehra, R. C. Gupta, and B. S. Thomas, "Properties of concrete containing jarosite as a partial substitute for fine aggregate," *Journal of Cleaner Production*, vol. 120, pp. 241–248, 2016. <u>http://doi.org/10.1016/j.jclepro.2016.01.015</u>
- 42. V. Arora, S.N. Sachdeva, and P. Aggarwal, "Effect of use of Jarosite on

workability and early age strength of concrete", *International Journal of Computer & Mathematical Sciences*, IJCMS, vol 4, Special Issue, pp. 136–144, March 2015.

- 43. Swayze, G.A., Desborough, G.A., Smith, K.S., Lowers, H.A., Hammarstrom, J.M., Diehl, S.F., Leinz, R.W. and Driscoll, R.L. "Chapter B: Understanding Jarosite - From Mine Waste to Mars Jarosite Geochemistry", [Online], Available: <u>https://speclab.cr.usgs.gov/PAPERS/jarosite_circular08/usgs_circular_1328_jar</u> <u>osite_chapterB.pdf</u> [Accessed: 14-Jun-2018].
- 44. W. Kunda, and H. Veltman, "Decomposition of Jarosite", *Metallurgical Transactions*, Vol 10B, pp.439-446, 1979. http://doi.org/10.1016/j.jhazmat.2011.05.049.
- 45. J. Boháček, J. Šubrt, T. Hanslík and J. Tláskal, "Preparing particulate magnetites with pigment properties from suspensions of basic iron(III) sulphates with the structure of jarosite", *Journal of Materials Science*, vol. 28, no. 10, pp. 2827-2832, 1993.
- 46. H. Vu, J. Jandová, and T. Hron, "Recovery of pigment-quality magnetite from jarosite precipitates," *Hydrometallurgy*, vol. 101, no. 1-2, pp. 1–6, 2010.
- 47. S. Ju, Y. Zhang, Y. Zhang, P. Xue, and Y. Wang, "Clean hydrometallurgical route to recover zinc, silver, lead, copper, cadmium and iron from hazardous jarosite residues produced during zinc hydrometallurgy," *Journal of Hazardous Materials*, vol. 192, no. 2, pp. 554–558, 2011.

http://doi.org/10.1016/j.jhazmat.2014.05.091.

48. H. Han, W. Sun, Y. Hu, B. Jia, and H. Tang, "Anglesite and silver recovery from jarosite residues through roasting and sulfidization-flotation in zinc hydrometallurgy," *Journal of Hazardous Materials*, vol. 278, pp. 49–54, 2014.

- 49. J. Ryan and J. L. Stroehlein, "Copper Industrial Byproducts for Improving Iron Deficient Calcareous Soils", *Agronomy Journal*, vol. 68, no. 1, p. 79, 1976.
- 50. I. Kanabo and R. Gilkes, "Low-Contaminant Jarosite Waste as a Fertilizer Amendment", *Journal of Environment Quality*, vol. 21, no. 4, p. 679, 1992.
- 51. S.N. Williams, R.J. Gilkes, and N.G. Bernard, "Waste jarosite and alunite will be ineffective sulphur and potassium fertilisers", *Australian Journal of Soil Research*. Vol. 38, no. 2, pp.:493-500, 2000.
- 52. M. Pelino, Interceram. vol 47, no. 1, pp: 22-26, 1998.
- 53. A. Karamanov, G. Taglieri, and M. Pelino, "Iron-Rich Sintered Glass-Ceramics from Industrial Wastes," *Journal of the American Ceramic Society*, vol. 82, no. 11, pp. 3012–3016, 2004.
- 54. ASTM. (2004) D6913-04, "Standard Test Methods for Particle Size Distribution of Soils", (Sieve analysis), American Society for Testing of Materials, Pennsylvania, PA, USA.
- 55. ASTM (2007) D422-63, "Standard Test Methods for Particle Size Analysis of Soils". American Society for Testing of Materials, Pennsylvania, PA, USA.
- 56. ASTM (2000) D4318-10, "Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils". American Society for Testing of Materials, Pennsylvania, PA, USA.
- 57. ASTM (2011) D2487-11, "Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)", American Society for Testing of Materials, Pennsylvania, PA, USA.
- 58. ASTM (2010) D854, "Standard Test Methods For Specific Gravity Of Soil", American Society for Testing of Materials, Pennsylvania, PA, USA.

- 59. BIS (1980): 2911(3): Methods of Tests for Soil, Part 3, "Determination of Differential Free Swell Index Soils", Bureau of Indian Standards, New Delhi.
- 60. A. Sridharan, and P. Sivapullaiah, "Mini Compaction Test Apparatus for Fine Grained Soils," *Geotechnical Testing Journal* (ASTM D698- 12e1), vol. 28, no. 3, pp. 240-246, 2005.
- 61. ASTM (2003) D5084-03, "Standard Test Methods for Falling Head Permeability Test Of Soils". American Society for Testing of Materials, Pennsylvania, PA, USA.
- 62. ASTM. (2006) D2166-06, "Standard Test Method for Unconfined Compressive Strength of Cohesive Soil", American Society for Testing of Materials, Pennsylvania, PA, USA.
- 63. ASTM (2016) D3967, "Standard Test Method for Splitting Tensile Strength of Intact Rock Core Specimens", American Society for Testing of Materials, Pennsylvania, PA, USA.
- 64. ASTM (2015) D560M-15, "Standard Test Methods for Freezing and Thawing Compacted Soil-Cement Mixtures", American Society for Testing of Materials, Pennsylvania, PA, USA.
- 65. BIS (1985): 2720(4), Methods of Tests for Soil, Part 4, "Grain Size Analysis", Bureau of Indian Standards, New Delhi.
- 66. BIS (1985): 2720(5), Methods of Tests for Soil, "Determination of Liquid Limit and Plastic Limit", Bureau of Indian Standards, New Delhi.
- 67. BIS (1970): 1498, Methods of Tests for Soil, Edition 2.2, "Soil Classification System", Bureau of Indian Standards, New Delhi.
- 68. BIS (1980): 2720 (3), Methods of Tests for Soil, Part 3/Sec1, "Determination of Specific Gravity", Bureau of Indian Standards, New Delhi.

- 69. BIS (1991): 2720(9), Methods of Tests for Soil, Part 9, "Determination of Falling Head Permeability of Soil", Bureau of Indian Standards, New Delhi.
- 70. BIS (1991): 2720(10), Methods of Tests for Soil, Part 10, "Determination of Unconfined Compressive Strength of Soil", Bureau of Indian Standards, New Delhi.
- 71. BIS (1981): 10082, "Method of test for determination of tensile strength by indirect tests on rock specimens", Bureau of Indian Standards, New Delhi.
- 72. BIS (1968): 4332, Methods of Tests for Soil, Part 4, "Wetting and Drying, and Freezing and Thawing Tests for Compacted Soil-Cement Mixtures", Bureau of Indian Standards, New Delhi.
- 73. BIS (2002): 12894, "Pulverized fuel ash-lime Bricks-specification, Bureau of Indian Standards", Bureau of Indian Standards, New Delhi.
- 74. I. Vaniček, "The Importance of Tensile Strength in Geotechnical Engineering" Acta Geotechnica Slovenica. Vol. 10, no. 1, 2013.
- 75. C.W. Jones, "Long term changes in the properties of soil linings for canal seepage control. Report No". REC-ERC-87-1. U.S. Department of the Interior, Bureau of Reclamation, Engineering and Research Center, Denver, CO, 1987.
- 76. H. Güllü, "Unconfined compressive strength and freeze-thaw resistance of finegrained soil stabilised with bottom ash, lime and superplasticiser", *Road Materials and Pavement Design*, vol. 16, no. 3, pp. 608–634, 2015. https://doi.org/10.1080/14680629.2015.1021369
- 77. J.L. Qi, J.M. Zhang, and Y.L. Zhu, "Influence of freezing-thawing on soil structure and its soils mechanics significance". *Chinese Journal of Rock Mechanics and Engineering*. (supp. 2), pp. 2690-2694, 2004. (In Chinese).

- 78. D.Y. Wang, W. Ma, Y.-H. Niu, X.-X. Chang, and Z. Wen, "Effects of cyclic freezing and thawing on mechanical properties of Qinghai–Tibet clay," *Cold Regions Science and Technology*, vol. 48, no. 1, pp. 34–43, 2007. https://doi.org/10.1016/j.coldregions.2006.09.008
- 79. H. Güllü and A. Khudir, "Effect of freeze-thaw cycles on unconfined compressive strength of fine-grained soil treated with jute fiber, steel fiber and lime," *Cold Regions Science and Technology*, vol. 106-107, pp. 55–65, 2014. <u>https://doi.org/10.1016/j.coldregions.2014.06.008</u>
- 80. W. Lee, N. Bohra, A. Altschaeffl, and T. White, "Resilient modulus of cohesive soils and the effect of freeze–thaw," *Canadian Geotechnical Journal*, vol. 32, no. 4, pp. 559–568, 1995.
- 81. M. Ghazavi and M. Roustaie, "The influence of freeze-thaw cycles on the unconfined compressive strength of fiber-reinforced clay", *Cold Regions Science* and Technology, vol. 61, no. 2-3, pp. 125-131, 2010.
- 82. M. Roustaei, A. Eslami, and M. Ghazavi, "Effects of freeze-thaw cycles on a fiber reinforced fine grained soil in relation to geotechnical parameters," *Cold Regions Science and Technology*, vol. 120, pp. 127–137, 2015. https://doi.org/10.1016/j.coldregions.2015.09.011
- 82a. ASTM (2018) C977-18, "Standard Test Method for Quicklime and Hydrated Lime for Soil Stabilization", American Society for Testing of Materials, Pennsylvania, PA, USA.
- 82b. J.K. Mitchell, "Soil improvement: state-of-the-art report'. Proceedings of the 10th International Conference on Soil Mechanics and Foundation Engineering, Stockholm, pp. 509–565, 1981.

- 83. F. Bell, "Lime stabilization of clay minerals and soils", *Engineering Geology*, vol. 42, no. 4, pp. 223-237, 1996.
- 84. J. M. Kate, "Strength and Volume Change Behavior of Expansive Soils Treated with Fly Ash," *Innovations in Grouting and Soil Improvement*, Sep. 2005.
- 85. A. K. Sharma and P. Sivapullaiah, "Ground granulated blast furnace slag amended fly ash as an expansive soil stabilizer", *Soils and Foundations*, vol. 56, no. 2, pp. 205–212, 2016.
- 86. J.L. Eades and R.E. Grim. A quick test to determine lime requirements for soil stabilization. Highway Research Record No. 139. Highway Research Board, Washington D.C, pp. 61–72, 1966.
- 87. H. Brandl, "Alteration of soil properties by stabilization with lime", Proc., 10th Int. Conf. on Soil Mechanics and Foundation Engineering, A.A. Balkema, Rotterdam, Vol. 3, 587, 1981.
- 88. M. Jafari and M. Esna-ashari, "Effect of waste tire cord reinforcement on unconfined compressive strength of lime stabilized clayey soil under freeze-thaw condition", *Cold Regions Science and Technology*, vol. 82, pp. 21-29, 2012.
- K. A. Cruzda, and M. Hohmann, "Freezing effect on strength of clayey soils." *Appl. Clay Sci.*, 12(1), 165–187, 1997.
- 90. P. Viklander and D. Eigenbrod, "Stone movements and permeability changes in till caused by freezing and thawing," *Cold Regions Science and Technology*, vol. 31, no. 2, pp. 151–162, 2000.
- 90a. Portland cement Association, "Soil Cement Laboratory Handbook", Chicago. III, 1959.

- 90b. ASTM (2009) D3282, "Standard Practice for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes, American Society for Testing of Materials, Pennsylvania, PA, USA.
- 91. P.T. Sherwood, Soil Stabilisation with Cement and Lime: State of the Art Review, HMSO Publication, 1993.
- 92. E. Kalkan and S. Akbulut, "The positive effects of silica fume on the permeability, swelling pressure and compressive strength of natural clay liners," *Engineering Geology*, vol. 73, no. 1-2, pp. 145–156, 2004.
- 93. United Facilities Criteria (3-250-11). "Soil Stabilization for Pavements". TM 5-822-14/AFJMAN 32/1019, 2004, Available: <u>http://wbdg.org/FFC/DOD/UFC/ufc_3_250_11_2004.pdf</u> [Accessed: 14-Jun-2018].
- 94. CPWD (2016). "Analysis for rates of Delhi", A Government of India Publication,Vol. 1, Central Public Work Department, New Delhi, India.
- 95. J. Dutrizac, "Converting jarosite residues into compact hematite products", *JOM*, vol. 42, no. 1, pp. 36-39, 1990.
- 96. S.R. Kaniraj, V.G. Havanagi, "Compressive strength of cement stabilized fly ashsoil mixtures", *Cement and Concrete Research*, vol. 29, no. 5, pp. 673–677, 1999.
- 97. S. Kumar, R.K. Datta, "Microstructural development in bentonite modified with lime and phoshpogypsum", International multi track conference on science, engineering and technology innovations, pp. 126–129, 2014.
- 98. S. Kumar, R.K. Datta, and B. Mohanty, "Potential of bentonite-lime-mix modified with phosphogypsum and reinforced with sisal fibres", *Periodica Polytechnica Civil Eng*, vol. 59, no. 2, pp. 143–154, 2015. <u>https://doi.org/10.3311/PPci.7733</u>

99. Portland cement Association, "Solidification and Stabilization of Wastes Using Portland Cement", the united states of America: Report 7355.