

Flexural Strengthening of Light Weight Reinforced Concrete Beams by Using Glass Fiber Reinforced Polymer

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***Abstract:** The use of Lightweight concretes has gained acceptance and popularity worldwide in the recent years in the construction and development of both the infrastructure and residential buildings. Light weight aggregate concrete has become more popular in recent advancements owing to the tremendous advantages it offers over the conventional concrete but at the same time light in weight and strong enough to be used for structural purposes. Replacement of natural aggregate with concrete such as light weight concrete by using sintered fly ash aggregate (natural aggregate), The main disadvantage of conventional concrete it is high self-weight. This heavy self-weight will make it to some extent an uneconomical structural material. Light weight concrete having low density facilitates reduction of dead load and to increase thermal insulation.*

REFERENCES

- [1] AbdulKadir Ismail Al-hadithi, Self-Compacting Light Wt concrete containing ponzo. Aggregate, University of Anbar, Iraq (Jan-2019).
- [2] AFAF Mo.wedatalla, Abubaker A.M Ahmed, Effect of curing and Period of Curing on Concrete,(Sep, 2018).
- [3] Ahsan Ali, Shahid Iqabab, Thomas Bier, Yuri Ribakov, Study on structure of concrete, Germany, (March,2016).
- [4] Amalu R.G, Azeef Ashraf, Muhammat Hussain, Use of waste plastic as fine aggregate substitute in concrete, UKF COE,India, (April,2016).
- [5] Amir Hossein Niknamfar, Generating structural Light wt. Concrete, AIISE, USA (Nov,2017).
- [6] A.R. Pourkhorshidi,M. Najimi, T. Parhizkar (July 2012), "Application of Pumice Aggregate in Structural Lightweight Concrete" Asian Journal of Civil Engineering (Building and Housing) Vol. 13, No. 1, Issue 1.
- [7] Anil Godara, Anurag Maheswari, Ashish Kumar Meena, Rakesh Kumar Saini (May 2018), "Experimental study on light weight concrete with pumice stone as a partial replacement of coarse aggregate", ISSN: 2277-2723, Volume 7, Issue 5.
- [8] B. Devi Pravallika, K. Venkateswara Rao (2015), "The study on strength properties of light weight concrete using light weight aggregate" International Journal of Science and Research (IJSR) ISSN: 2319-7064, Volume 5, Issue 6.
- [9] B. Jose Ravindra Raj, V. Ravikumar (April 2017), "Experimental behaviour of light weight aggregate and mineral admixtures based light weight concrete", International Journal of Emerging Technologies in Engineering Research (IJETER) ISSN: 2454-6410, Volume 5, Issue 4.
- [10] Chrdsaqusiri Pattanponga, Properties of cellular light wt. concrete using calcium bottom ash, Portland cement,geopolymer mortar (January,2020).
- [11] Davoud Tavakoli, Use of Waste material in Concrete, Iran (April,2018).
- [12] Dr. K Rajeskhari, M Praveen Kumar, (Sept 2016) Light weight concrete by partial replacement of coarse aggregate by pumice stone and cement by GGBS using M30 grade of concrete.
- [13] Dr.Sunila George, Rajeshwari S, (2015), "Experimental study of light weight concrete by partial replacement of coarse aggregate using pumice aggregate", International Journal of Scientific Engineering and Research (IJSER) ISSN: 2347-3878, Volume 4, Issue 5.

- [14] Dr. U. Rangaraju, Lakshmi Kumar Minapu, M K M V Ratnam, (Dec 2014), “Experimental study on light weight aggregate concrete with pumice stone, silica fume and fly ash as a partial replacement of coarse aggregate” International Journal of Innovative Research in Science, Engineering and Technology ISSN: 2319-8753, Volume 3, Issue 12.
- [15] G. Gunasekaran, Light wt. Concrete by using Cocunut shell as Aggregates, SRM University,India (Feb,2008).
- [16] Hirzo Mihashi Tomoya Nishiwaki, Development of Engineered self-healing & self-Repairing concrete, Hirzostate of Art-Report (April,2012).
- [17] Issac Ibukan Akinwumi, Curing effect on Properties of high strength Concrete, Covenant University (June, 2014).
- [18] Jose Barrose De Aguiar, Habib Trouzine, Malika Medine, Structural light wt. concrete properties, USA (August,2017).
- [19] K. Mahendra ,K. Venkataramana, L. Hari Krishna ,M.Rajasekhar, S. Prashanth “Experimental Investigation On Structural Lightweight Concrete By Partial Replacement Of Coarse Aggregate Using Pumice Aggregate”International Journal of Engineering Applied Sciences and Technology, 2020 Vol. 4, Issue 11, ISSN No. 2455-2143, Pages 429-433.
- [20] Khashayar Jafari Mostafa, Vahab, Study of Behaviour of Concrete under Axial & Triaxial load, USA (August,2017).
- [21] Kothari Akash and Chaudhari Balasaheb (April 2017) Study of lightweight precast concrete using polystyrene.
- [22] Kouros Kabiri, Super Absorbant Polymer, Iran (June,2008).
- [23] Lakshmi Kumar, Minapu, et al (Dec 2014) Study on Light Weight Aggregate Concrete with Pumice Stone, Silica Fume and Fly Ash as a Partial Replacement of Coarse Aggregate.
- [24] M. Indumathi,P. Selvaprasanth, S. Mathan Kumar, and (Feb 2019) “Development of Light Weight Concrete Using Pumice Stone”International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056, Volume: 6, Issue: 2.
- [25] M. Maghfouri, Quality control of light wt. aggregate concrete based on initial and final water absorption Test, Iraq (June,2017).
- [26] Sukmin Kwon, Tomoya Nishiwaki, Takatsune Kikuta, Material Design Method for light wt. Cement base & its Applications (June,2017). □

BIOGRAPHY



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