



Figure 2: Compression Test on Cubes

3.1 Test results of tensile test:

The cylinder specimens were tested for tensile strength at the end of 7days, 14days, and 28days.

The Tensile strength of the specimen was calculated by using the formula

$$\text{Tensile strength} = 2P/\pi LD$$

The results of the tensile strength tests on concrete cubes are shown in Table 2(a), (b) and Figure 2



Figure 3: Split tensile Test on cylinders

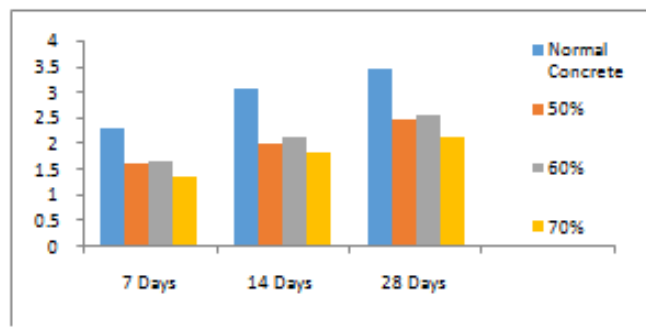
Table 2(a): Test Result of Split Tensile Strength

Normal Concrete	Average Compressive Strength N/mm ²		
	7 Days	14 Days	28 Days
M ₂₅	2.312	3.06	3.43

Table 2(b): Test Result for Split Tensile Strength

SI. NO	Percentage replacement of Pumice	Average Compressive Strength N/mm ²		
		7 Days	14 Days	28 Days
1	0%	2.312	3.06	3.43
2	50%	1.62	1.98	2.48
3	60%	1.65	2.123	2.54
4	70%	1.38	1.84	2.123

Comparison of tensile strength results



4. Conclusions

Based on the experimental investigations concerning the compressive strength and split tensile strength of concrete, the observations and the following conclusions are drawn from the present study.

- Compression strength value is compared to normal concrete and replacement of Coarse aggregate by Pumice from different percentages (50%, 60%, 70%).
- Maximum value of strength is obtained in 60% replacement of Pumice with coarse aggregate.
- Concrete with 60% replacement of pumice the compressive strength is comparable with normal concrete.
- This type of concrete can be utilized in wall panels of non load bearing type for use in precast buildings.

5. Scope for Further Study

Seeing the advantages of light weight concrete, further investigation will be carried out with this aggregate in casting of wall panels and their behavior can be studied for non load bearing walls under different load conditions.

References

- [1] Kenneth S. Harmon, PE, California Stalite Company- United States, "Engineering Properties of Structural Lightweight Concrete".
- [2] Kawab H.Al-Rawai,Mazin T. Al.kuttan,et.al " Some mechanical properties of Pumice Light Weight Aggregate Concrete incorporating Rice Husk Ash"
- [3] Hjh kamsiah Mohd.Ismail (Head),et.al" Study of Light Weight concrete Behaviour"
- [4] N.Venkata Ramana , "Behaviour of Pumice Light Weight Concrete." International Journal of Advance Research In Science And Engineering IJARSE, Vol. No.4, Special Issue (01), April 2015
- [5] İ.Uğur , "Improving The Strength Characteristics of The Pumice Aggregate Lightweight Concretes "
- [6] Lakshmi Kumar Minapul,et.al , "Experimental Study on Light Weight Aggregate Concrete with Pumice Stone, Silica Fume and Fly Ash as a Partial Replacement of Coarse Aggregate, Vol. 3, Issue 12, December 2014.
- [7] Mang,uriu Geoffrey N,et.al, "Properties of Pumice Lightweight "Vol 2, No.10, 2012

- [8] Slamet Widodo, "Experimental Study On The Potential Use Of Pumice Breccia As Coarse Aggregate In Structural Lightweight Concrete", Vol 5, No 1, 2014
- [9] D Beheshti zadeh et.al, "Structural Lightweight Concrete Production Using Eskandan Region Pumice"
- [10] Sreenu Babu Deyyala, "An Experimental Study on Compressive Strength of Steel Fibre Reinforced High Strength Light Weight Aggregate (Pumice Stone) Concrete", Volume 10, Issue 12 (December 2014)
- [11] IS 10262: 2009, "*Indian Standard, recommended guidelines for concrete mix designs*", Bureau of Indian Standard, New Delhi.
- [12] IS 383 -1970 "*Specifications for Coarse and Fine Aggregates from Natural Sources for Concrete*", Bureau of Indian Standards, New Delhi.
- [13] IS 456: 2000, "*Indian Standard, Plain and reinforced concrete- Code of practice*", Bureau of Indian Standard, New Delhi, 2000.
- [14] IS 516:1959, "*Method of Tests for Strength of concrete*", Bureau of Indian Standard, New Delhi

