

“APPLICATION OF WATER-SOLUBLE POLYMER IN CEMENT CONCRETE MIXES ORDINARY TYPE”

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Abstract- The idea of a world without concrete is impossible. Concrete is needed to build strength in structures. Ordinary concrete, which is a mixture of cement, a good amount, a coarse amount of water, needs to be healed to gain strength.

As water becomes increasingly rare on a daily basis, there is an urgent need to conserve water for concrete and construction. Treatment is very necessary to get strength at the same time and the lack of proper treatment can adversely affect the strength and durability of the concrete. Self-adhesive concrete is one type of modern concrete, which cures itself by retaining water (moisture content) in it. The use of SUPER ABSORBENT POLYMER in conventional concrete as a mixture facilitates better water flow and thus the strength of the concrete. As water becomes increasingly rare on a daily basis, there is an urgent need to conduct research on water conservation in concrete and construction.

Key words : Concrete, SAP, Admixture

1. INTRODUCTION

SAP absorbs water and converts it into a jelly, then releases it slowly over time. This structure was very useful when it came to watering the plants over time. This study has shown similarities between concrete and vegetation when it comes to the need for continuous water supply. Excess SAP value will leave the concrete with large numbers of voids, which reduces concrete strength and durability. A small amount of SAP, on the other hand, will have a negative impact on concrete performance. The amount of water added to the new concrete is one of the most important factors affecting concrete structures, including durability and strength.

Concrete is the soul of the infrastructure. Concrete is needed to build strength in structures. Ordinary concrete, which is a mixture of cement, a good amount, a rough amount of water and water needed to gain the required strength. It is therefore necessary to treat at least 28 days to get the right flow of water and gain the intended energy. Over the past few years, the inner healing of concrete has gained popularity with your gradual development from the laboratory field of practice. Internal process guides The

occurrence of cement failure due to the availability of additional internal water that is not part of the mixed water; “INTERNAL MEDICINE” is often referred to as self-healing. Internally treated concrete can be your own self-healing AGENTS. The idea of internally treated agents is to reduce evaporation from concrete, which increases the water retention capacity of concrete. The durability and performance of concrete depend mainly on the development of its microstructure and pore structure, for which curing plays a major role. With water resources becoming scarce in many countries, the use of self-curing admixtures is becoming more and more important.

1.1 OBJECTIVE

Determining the compressive strength, flexibility and fragmentation by adding self-adhesive polymer-absorbing agents to varying percentages. Comparing power behavior with conventional concrete. Given the current situation, water conservation should be prioritized over money so with the same economic features of conventional and internally made concrete, we should start using a concrete method that is managed within the construction industry. cement materials (by products) by adding SAP i.e. adhesive concrete

1.2 Scope of Project:

Water shortages will be resolved by the concrete you carry. Adhesive concrete that controls the rate and increase of moisture loss from concrete during water installation. Reduce excess water use.

1.3 Limitation

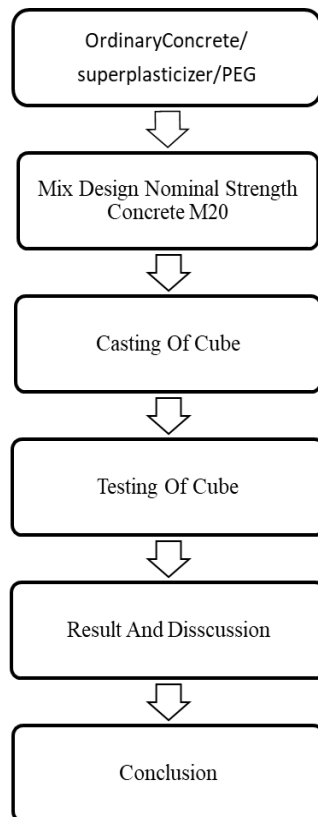
It does not work well for standing members like piers, columns etc.

It does not help in areas where there is no water where treatment is neglected due to unavailability.

Improper treatment for childbirth causes crack growth in the structure.

In various cases, fertility cannot cure the structure by hand and the structure remains untreated does not cause energy development.

2. Methodology



3. Conclusion

1. The amount of water needed to prepare the concrete is small.
2. Large quantity mixing of different percentages of Polyethylene glycol (powder) and superplasticizer (liquid) The maximum pressure was obtained after the addition of 0.5% milk for 28 days of M20 concrete marks.
3. The maximum concentration of different percentages of Polyethylene glycol (powder) and superplasticizer (liquid) is the limit of the solids of the solids separated was found that after the addition of 0.5% juice 28 days of M20 concrete marks.
4. Maximum mixing of different percentages of Polyethylene glycol (powder) and superplasticizer (liquid) is the limit of the strongest strength obtained after the addition of 0.1% liquid for 28 days of M20 grade concrete.
5. Independent concrete is the best solution to the problems facing the desert region and that it is facing due to lack of proper treatment.
6. The drawback of this combination is the high cost.

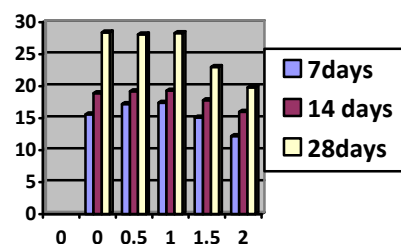
7. Using this combination the desired strength of the concrete can be obtained.

4. Result

Compressive Strength Result

Sr.no	%	7Days	14Days	28Days
1	0	15.6	18.9	28.4
2	0.5	17.2	19.2	28.1
3	1	17.4	19.3	28.3
4	1.5	15.1	17.8	23
5	2	12.2	16	19.8

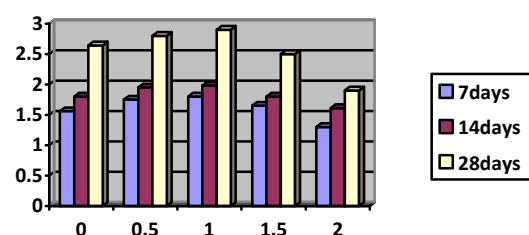
Compressive Strength Result



Split Tensile Strength Result

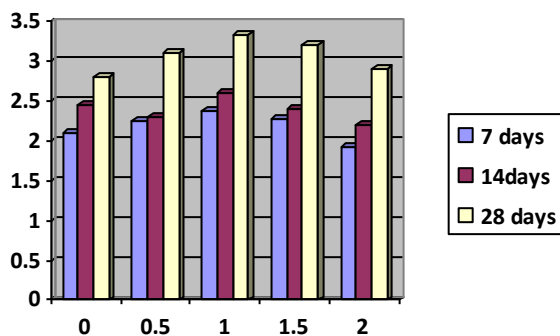
Sr. No	%	7 Days	14 Days	28 Days
1	0	1.56	1.8	2.64
2	0.5	1.75	1.95	2.8
3	1	1.8	1.98	2.9
4	1.5	1.65	1.8	2.5
5	2	1.3	1.61	1.9

Split Tensile Strength



Flexural Tensile Strength Result

Sr. No	%	7 Days	14 Days	28 Days
1	0	2.1	2.45	2.8
2	0.5	2.25	2.3	3.1
3	1	2.38	2.6	3.34
4	1.5	2.28	2.4	3.2
5	2	1.92	2.2	2.9



Discussion:-

Here we discuss the concrete effect of M20 after mixing different percentages of Admixture such as polyethylene glycol in powder form & liquid superplasticizer to note that in a pressure test, up to 1% strength is increased and subsequently reduced. And in separating tensile strength and Flexural tensile strength, power up to 1% is increased and subsequently decreased.

4. Reference

1. Al Nasra, Moayyad, "Optimizing the use of Sodium Polyacrylate in plain concrete," International Journal of Engineering Research and Application (IJERA) ISSN:2248-9622, Vol.3, Issue 3, May-Jun (2013), Pages 1058-1062
2. Bentz, D.P., "Capillary Porosity Depercolation/Repercolation in Hydrating Cement Pastes via Low Temperature Calorimetry Measurements and CEMHYD3D Modeling," Journal of the American Ceramic Society, 89 (8), 2606-2611, 2006.
3. Bentz, D.P., "Influence of Curing Conditions on Water Loss and Hydration in Cement Pastes with and without Fly Ash Substitution," NISTIR 6886, U.S. Dept. Commerce, July 2002.
4. Bala Subramanian K, Siva A, Swaminathan S, Arul. M. G. Ajin, Development of High Strength Self Curing Concrete Using Super Absorbing Polymer, International Journal of

Civil, Environmental, Structural, Construction and Architectural Engineering, Vol:9,2015, pp no:12-16 International Journal of Scientific Research and Review Volume 7, Issue 7, 2018 ISSN NO: 2279-54.

5. H.Beushapusen, M. Gillmer "As an SAP to reduce the cracking of seals" University of Cape Town, Department of Public Engineering, Concrete Materials and Structural Integrity Research Unit, South Africa, Cement & Concrete Composites 52 (2014), 1-8.

6. Jemin Joel S, Varatharajan S, Maruthachalam D and Antony Jeyendran S, Influence of Fibres on Fresh and Hardened Properties of Self-Curing Concrete, International Journal of Advanced Structures and Geotechnical Engineering, Vol. 03, No. 01, 2014.

7. Kenneth Sequeira, Raghu H. Naik, B. H. V. Pai, Use of Superabsorbent Polymers in Internally Cured Concrete- A Review, International Research Journal of Engineering and Technology, Volume: 02 Issue: 03, 2015.

8. O.M.Jensen, "The Use of Superabsorbent polymers in concrete," Concrete International, vol 35, No 1, January 1 (2013), Page 48-52.

9. Sreenivasa Kumar A, Dr. Suresh Babu T, Effect of Self Curing Compound on Strength and Durability of M25 Mix Concrete, International Journal of New Technology and Research, Volume-1, Issue-5, 2015, Pages 01-04.

10. Pushkraj Admille (2020) A Review paper on the Performance of Structural Concrete using Recycled Plastics as Course Aggregate International Journal of Advance Research, Ideas and Innovations in Technology ISSN: 2454-132X, Volume3, Issue6, p 340-347.