

# Water Proofing Concrete By Using Fake Snow Powder

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## ABSTRACT

*Waterproof concrete has reduced capillary water absorption properties as well as low permeability to water under pressure. Such qualities allow “waterproof” concrete to be used in water-resisting construction below ground in place of membranes, particularly where application of membranes is complicated by details and irregularities on the surface areas, thereby decreasing installation time and labour costs. In this paper a novel admixture to give waterproof cement is examined. This waterproofing admixture gives added decrease in drying shrinkage to moderate the advancement of splits, along these lines disposing of a noteworthy worry with the solid just way to deal with waterproofing. Not with standing upgraded imperviousness to breaking, concrete created with the new admixture has brilliant execution in the decrease of porousness and narrow assimilation and in addition great quality development. Various research center test outcomes and field extends for the most part from Asian nations will be exhibited and talked about in this paper. Waterproofing of underground structures is every now and again an issue and a scope of arrangements have been attempted in the most recent two decades. Commanding the market are PVC and HDPE (high thickness poly ethylene) sheet layers, however as of late the option, is solid admixtures for water penetrability diminishing thus that utilization in solid disconnection (waterproofing), the life span of a solid structure is impacted by the porousness of the solid. The fundamental goals of the venture is to concentrate the mechanical properties of cement and the change these properties by including waterproofing utilizing different mount rates and two sorts of waterproofing (ADDICRETE DM2-PLASTOCRET-N) arrangement of test studies were done on plain cement with included, ADDICRETE DM2 and PLASTOCRETE-N keeping in mind the end goal to examine their properties and impact on the water porousness of cement. In this study, it has been expansion ADDICRETE DM2 and PLASTOCRETE- N to the blend by contrast proportion. 1% of bond weight, consistent proportion from, sand, rock, bond and water. In our venture we are utilizing M30 review of concrete. The investigation of these tests by measuring the porousness of solid examples arranged in the research center. Many tests were completed and the outcomes were exhibited.*

**Keyword:** Water Proofing Concrete, Fake Snow Powder

## 1.INTRODUCTION

Amid development, precautionary measures must be taken to keep exorbitant dampness from being caught between the fortified solid rooftop structure and film. This is one of the regular reasons for level rooftop waterproofing disappointment. Huge measure of water vapor can vanish from fortified cement or a wet screed. Once the waterproofing layer is laid, drying out of the auxiliary piece will for the most part occur from the underside of the deck. Cross ventilation underneath the deck is typically very confined because of raised parcel dividers. Any caught dampness subjected to expanded temperature from the sun will frame vapor which will strive specifically underneath the waterproofing film. On the off chance that this vapor weight is not discharged or vented adequately, the development weight will start to shape a rankle on the film itself and lingering soginess on the underside of the rooftop. At the point when the waterproofing film has endured an irreversible extend, ensuing cooling won't bring about the air pocket to come back to its unique size. In this manner, if a dry surface can't be accomplished inside a sensible timeframe, coordinate film attachment ought to be put off or an option technique for lying ought to be considered.

### 1.1 Reinforced Cement Concrete

Plain concrete has relatively high compressive strength but significantly lower tensile strength. Hence any appreciable tension will lead to rupture and consequent failure. For this reason, the uses of plain concrete are limited to a structural member subjected to bending or direct tensile action. When reinforcement like steel bars is incorporated into concrete, a reinforced concrete section is created. Reinforced concrete is a concrete in which reinforcement bars have been incorporated to strengthen the material that would otherwise be brittle. These reinforced concrete sections are much more efficient in carrying tensile forces due to bending or direct tension than a plain concrete section with the same dimensions. The general rule is that concrete is strong in compression and steel is strong in tension.

### 1.2 Waterproofing Admixtures

Waterproofing admixtures are one of the chemical admixtures. Waterproofing admixtures reduces water absorption of concrete and mortar without causing strength reduction further it reduces permeability etc. These waterproofing admixtures may be obtained in powder, paste or liquid form. In addition they also accelerate the setting time of concrete and thus render the concrete more impervious at early stage. By reducing the volume of permeable voids within the concrete, these admixtures not only deliver a significant decrease in the permeability but also provide a positive waterproofing action. It increases the concrete's strength. Waterproofing admixtures can improve the physical properties of cement. For instance, waterproofing admixtures give expanded compressive and flexural quality and expanded compound resistance. It is utilized to lessen material cost by decrease in bond without loss of quality or by expanding quality without extra concrete. Waterproofing admixtures help to create impermeable cement for water holding structures, patios, storm cellars, burrows, heap establishments and so on. Waterproofing admixtures can likewise give critical cost reserve funds in light of the fact that the application is so simple. Admixtures might be added either straightforwardly to the solid at the clustering plant, or to the prepared blend truck on the development site. The requirement for work escalated application is dispensed with. These waterproofing admixtures can be utilized for outer and inside putting of underground structures, tanks, stone work, screed, and so on. Waterproofing admixtures might be of basic waterproofers or coatings.

## 2.LITERATURE REVIEW

Pradip Manjrekar and Rathi (2006) carried out some studies on waterproofing admixtures on concrete structures. In his paper he said that the superpalsticicers generally work by giving better dispersion of cement and simultaneously reducing the surface tension of the water or aqueous phase. This results into better wetting and proper hydration at lesser water requirements.It was concluded that the addition of admixtures can offset various errors, increasing the possibility of producing concrete up to specifications. He also says that the waterproofing admixtures are pour filling and porosity reducing materials. Asthana et al (2003) analysed about the problems and solutions for waterproofing in building. This paper says that one of the chronic problem in the construction industry is obtaining a defect free work, avoiding ingress of moisture in the buildings. If such seepage is allowed to continue, then unhygienic conditions will prevail and also the building may deteriorate to the extent that ultimately it becomes uninhabitable. In many cases the durability of the structure itself is seriously affected .Ingress of water or dampness or atmospheric pollution in the RCC structures results in corrosion of steel and spalling of concrete.

## 3.METHODOLOG

Figure.1. shows the Methodology adopted in this study

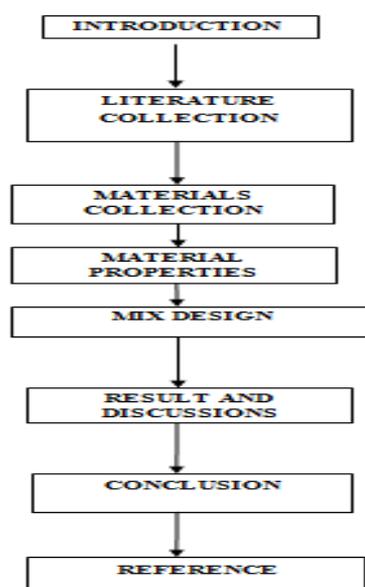


Figure.1. Methodology

**4.ADMIXTURES**

According to the properties and specifications given in IS 26451975, the following integral waterproofing chemicals are used.

**4.1 Naphthalene Based Admixtures**

Naphthalene is generally obtained from the petroleum refineries. It is one of the bi-product of petroleum distillation process. These chemicals are obtained from petroleum residues includes heavy mineral oil, paraffin waxes and bitumen emulsions. Very finely divided wax emulsions, produced from waxes with melting points about 57-60 and an emulsifying agents are also used.

**4.2 Ligno Based Admixtures**

Ligno (lignosulfonate) is derived from neutralisation, precipitation and fermentation process of the waste liquor obtained during the production of paper making pulp from wood whose composition includes about 20-30% of lignin (Rixom 1981). It contains a complex mixture of sulfonation products of lignin, decomposition products of cellulose and lignin, various carbohydrates, free sulfurous acid and sulfates. Commercial lignosulfonates contains upto 30% carbohydrates.

**4.3 Melamine Based Admixtures**

Melamine is the important category of superplasticizers. It is manufactured by normal resinification of melamine formaldehyde which is obtained from sugar industries. It mainly consists of molasses.

**4.4 Polymer Based Admixtures**

Polymer comprises of lattices, liquid saps which are dissolvable in water. The cross sections are more generally utilized than others. The significant sorts of cross sections involve styrene butadiene, ethylene vinyl acetate, poly acrylic ester, latex acrylic and epoxy sap (Sakuta et al 1985). Latex acrylic polymer based admixtures are utilized as a part of this investigation. There is a cooperation happens amongst polymers and hydrating cement. They are generally utilized for extension deck overlays and fixing, as cements, hostile to destructive liners, decorative coatings and essential water proofers.

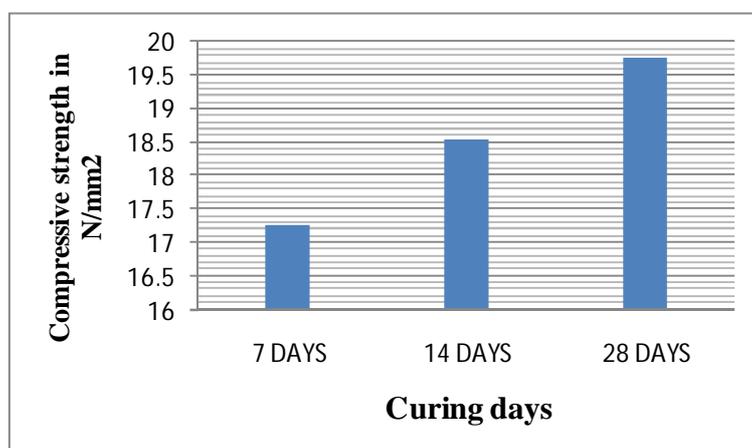
**5. TEST RESULT**

**5.1 Compressive Strength Of Cube**

Compressive Strength Test Results shown in Table.1 and Figure.2

**Table.1:** Compressive Strength Test Results

Grade of concrete	%Replacement	Compressive strength in N/mm <sup>2</sup>		
		7 days	14 days	28 days
M25	1%	17.26	18.54	19.75



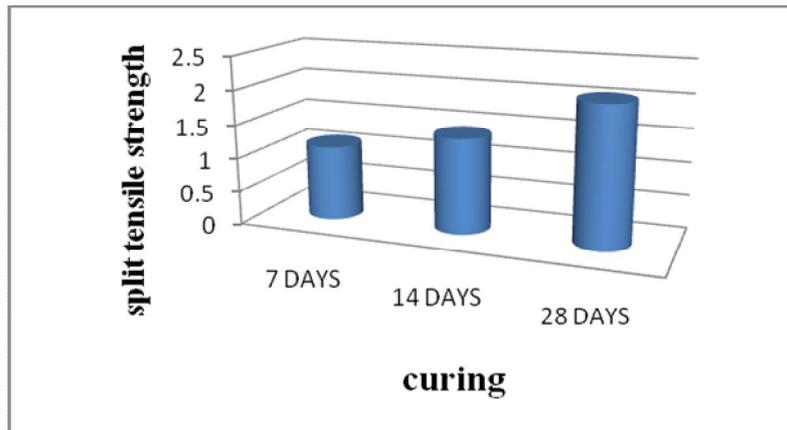
**Figure. 2:** Compressive Strength

**5.2 SPLIT TENSILE TEST FOR CYLINDER**

Split Tensile Test Results given in Table.2 and Figure.3

**Table.2:** Split Tensile Test Results

Grade of concrete	%Replacement	Split Tensile		
		7 days	14 days	28 days
M25	1%	1.12	1.42	2.06



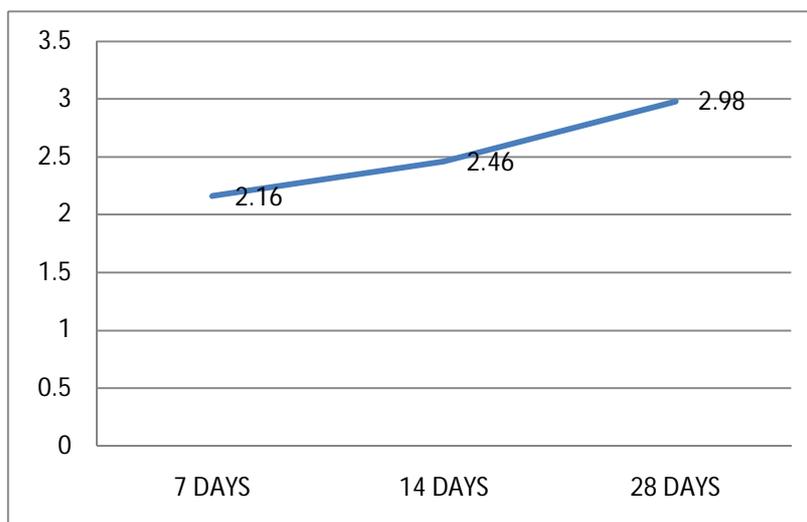
**Figure 3** Split Tensile Test

**5.3 FLEXURAL STRENGTH OF BEAM**

Flexural Strength Test Results given in Table.3 and Figure.4

**Table.3:** Flexural Strength Test Results

Grade of concrete	%Replacement	Flexural Strength		
		7 days	14 days	28 days
M25	1%	2.16	2.46	2.98



**Figure 4** Flexural Strength Test

## 6.CONCLUSION

- The addition of waterproofing admixtures modifies the workability of concrete without change in the w/c ratio. The lubricating actions may be due to the surfactants present in the admixtures. The increase in the slump values by 2.5 times compared to that of conventional concrete after addition of the above admixtures indicated that the cohesiveness of the cement concrete mix has increased. This also enhances the pump-able characteristics of concrete.
- Waterproofing admixtures result in a better dispersion of cement particles during mixing resulting in a dense concrete than the conventional cement concrete. This increased the mechanical properties such as compression, tension and flexure even after 7 days and 28 days of hydration. Since the strength enhancement is more due to the addition of Fake snow powder, it facilitates the removal of form work at early ages.
- The optimum level of compressive strength value is 19.75N/mm<sup>2</sup> at 28days.
- The incorporation of waterproofing admixtures in concrete reduces the corrosion behavior of steel in reinforced cement concrete structures.
- The shrinkage strain of concrete after the addition of waterproofing admixtures is found to be lesser than the conventional concrete.

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