





**Table 3** Proportion of concrete for M30(with & without admixture)

% Fiber	(For1 M <sup>3</sup> )	(For1 M <sup>3</sup> )
	0.0% , 0.5% , 1.0% , 1.5%	0.0% , 0.5% , 1.0% , 1.5%
Cement	370	490
water	148	197
Coarse aggregate	997	997
Fine aggregate	725	725
Super plasticizer	7	-
w/c ratio	0.40	0.40

#### 4. Result

##### A] Mix Proportions

A mix M30 grade was designed as per Indian Standard method and the same was used to prepare the test samples.

##### B] Compressive Strength

Compressive strength of concrete is tested on cube at different percentage of polypropylene fiber content in concrete. The strength of concrete has been tested on cube at 28 days. 28 days test gives the data of final strength of Concrete at 28 days curing. Compression testing machine is used for testing the compressive strength test on concrete. At the time of testing the cube is taken out of water and dried and then tested keeping the smooth faces in upper and lower part. The strength of concrete is very much dependant up on the hydration reaction. In this experiment, in all cases, i.e. for 0.5 % adding of cement by polypropylene fiber the test results, as shown in Table and show that twenty eighth days compressive. The reduction of the strength increased with increasing percentage of polypropylene fiber after some specific limit( after 0.5% )



**Figure 1:** Testing the Cube Specimen

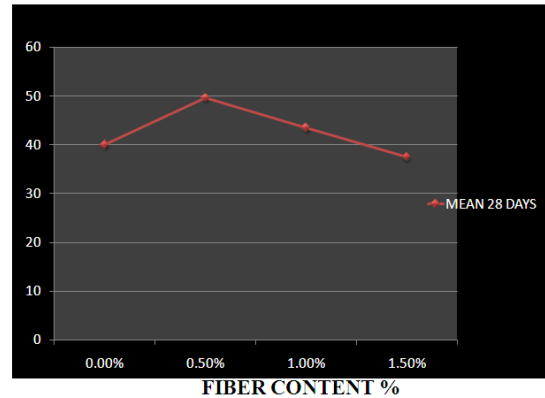
**Table 4:** Compressive Strength of concrete with admixture

Fiber Content %	Compressive Strength (28 Days Mean)
0.00	39.91
<b>0.50</b>	<b>49.56</b>
1.00	43.36
1.50	37.44

**Table 5:** Compressive Strength of concrete without admixture

Fiber Content %	Compressive Strength (28 Days Mean)
0.00	37.63
0.50	41.48

1.00	38.51
1.50	33.63



**Figure 2:** Test result of Compressive strength of 28 days

##### C] Split tensile strength

Split Tensile strength of concrete is tested on cylinders at different percentage of polypropylene fiber Content in concrete. The strength of concrete has been tested on cylinder at 28 days. 28 days test gives the data of final strength of concrete at 28 days curing. Compression testing machine is used for testing the Split Tensile strength test on concrete along with two wooden boards. At the time of testing the cylinder taken out of water and dried and then tested.



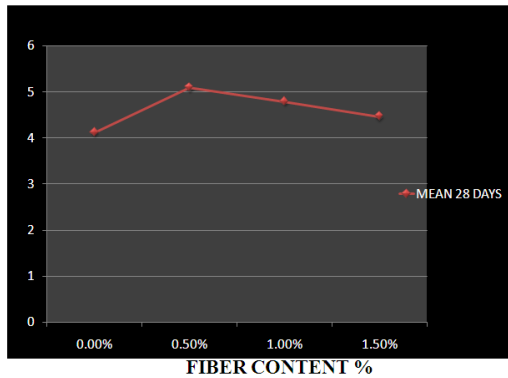
**Figure 3:** Testing the Cylinder Specimen

**Table 6:** tensile Strength of concrete with admixture

Fiber Content %	Tensile Strength (28 Days Mean)
0.00	4.12
<b>0.50</b>	<b>5.09</b>
1.00	4.79
1.50	4.46

**Table 7:** Tensile Strength of concrete without admixture

Fiber Content %	Tensile Strength (28 Days Mean)
0.00	3.76
0.50	4.38
1.00	3.82
1.50	3.39



**Figure 4:** Test result of Tensile strength of 28 days

From the figures, it can be seen that polypropylene fiber improves the compressive and split tensile strengths of concrete. As the percentage adding of concrete with polypropylene fiber increases, the compressive and split tensile strengths increase, reach a maximum value and then decrease.

## 5. Discussion

- 1) With the inclusion, by adding polypropylene fiber the strength of concrete gradually increases up to a certain limit (up to 0.5%) but then gradually decreases.
- 2) The replacement of natural sand with artificial sand is fissile and behavior and strength of reinforced concrete will improve.
- 3) Concrete mixes were added with polypropylene fiber in range of 0.1% to 1.5%. It improves compressive and tensile strength of concrete and also shows better results on mechanical properties like, improves arrest drying shrinkage cracks, reduces permeability hence ensures water tightness, reduces density ensures more yield of mix, minimizes steel reinforcement in industrial floors, improves durability, free from corrosive substances, improves impact strength, increase fatigue resistance & concrete toughness, non-magnetic, chemically inert and 100% alkali proof.

## 6. Conclusions

- 1) Up to 0.5% adding of concrete with polypropylene fiber there is optimum percentage to increase in all mechanical properties.
- 2) Compressive strength of material increases with increasing fibre content. Strength enhancement up to 24% for PFRC.
- 3) Strength enhancement in splitting tensile strength due to polypropylene fibre addition up to 22%.
- 4) The durability of concrete improves and addition of polypropylene fibers greatly improves the fracture parameters of concrete. Polypropylene fibre is Reduce number of joints And Reduce repair due to subsequent damage.
- 5) The compressive strength, split tensile strength increase with the addition of fiber content as compared with conventional concrete.
- 6) The workability of Polypropylene fibre concrete has been found to decrease with increase in Polypropylene fibre content replacement.

- 7) To minimize the costs for construction with usage of artificial sand which is cheaply available than natural sand.

## References

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