Table 5: Acid Attack (Hydrochloric Acid-HCl) for Conventional and Translucent concrete and mortar

Categories	% of POF	Sl no	Particulars (Strands *Location)	Compressive strength (N\mm^2)		Weight loss (Kg)
				7 Days	28 Days	
Concrete	0.30%	1	(10*4)	24.1	23.4	0.11
		2	(5*8)	23.3	22.65	0.16
		3	(4*12)	27	26.25	0.15
		4	(1*49)	28.55	27.35	0.1
	Normal	5	normal	32.6	30.45	0.15
	0.60%	6	(20*4)	31.9	29.68	0.01
		7	(10*8)	27.6	26.35	0.1
		8	(7*12)	33.8	31.25	0.05
		9	(1*81)	31.62	29.8	0.1
Mortar	0.30%	10	(10*4)	52.2	51.45	0.1
		11	(5*8)	53.4	52.3	0.15
		12	(4*12)	53.15	52.16	0.08
		13	(1*49)	54.6	53.1	0.11
	Normal	14	Normal	53.8	52.4	0.15
	0.60%	15	(20*4)	46.78	45.32	0.05
		16	(10*8)	49.6	48.75	0.08
		17	(7*12)	48.4	48.1	0.16
		18	(1*81)	49.35	48.55	0.02

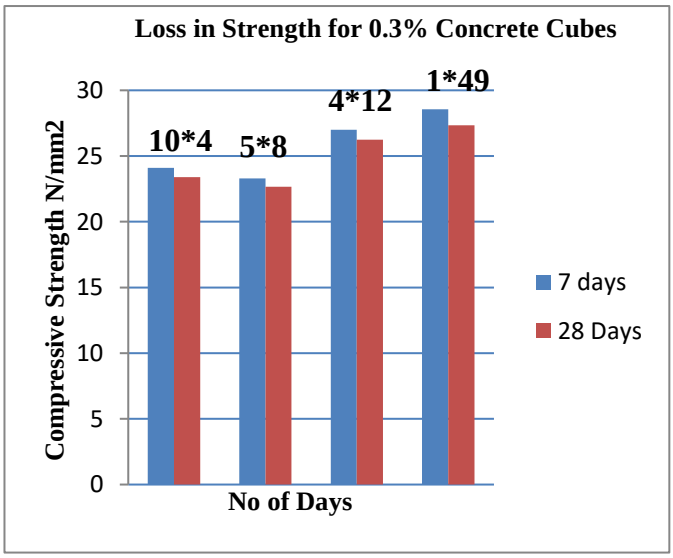

Fig11: Loss in Strength for 0.3% Concrete Cubes

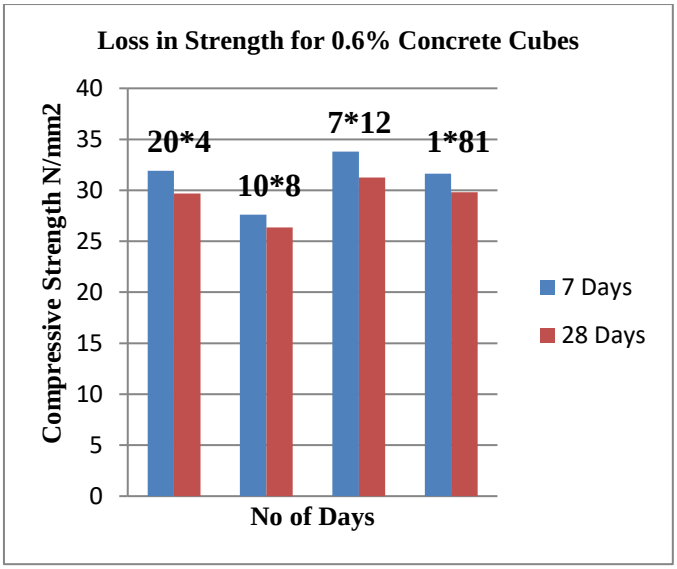

Fig12: Loss in Strength for 0.6% Concrete Cubes

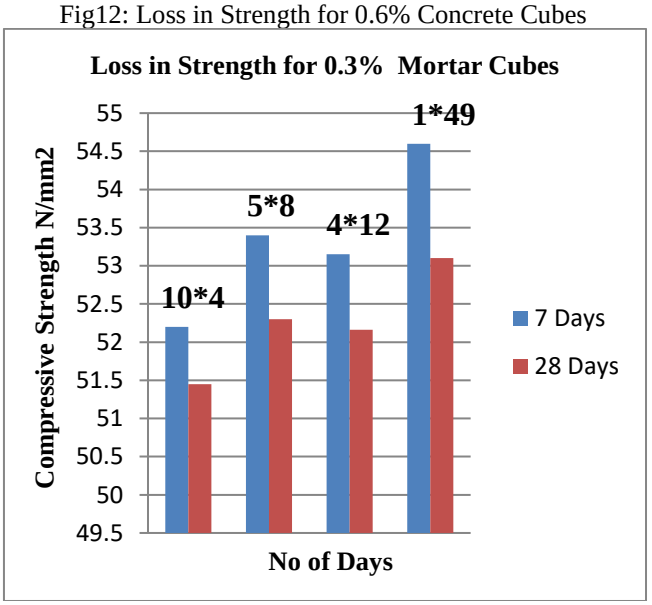

Fig13: Loss in Strength for 0.3% Mortar Cubes

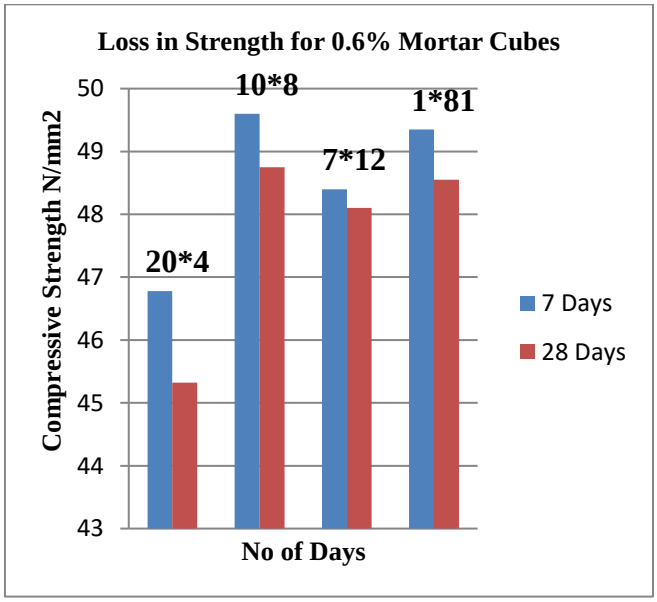

Fig14: Loss in Strength for 0.6% Mortar Cubes

Table 6: Sulphate Attack (Magnesium Sulphate-$MgSo_4$) Conventional and Translucent for concrete and mortar

Categories	% of POF	Sl No	Particulars (Strads * Location)	Compressive strength (N\mm^2)		Weigh t loss (Kg)
				7 Days	28 Days	
Concrete	0.30%	1	(10*4)	26.5	24.25	0.11
		2	(5*8)	26.1	24.5	0.15
		3	(4*12)	25.5	24.1	0.18
		4	(1*49)	26.7	24.8	0.17
	Normal	5	Normal	26.15	25.1	0.14
	0.60%	6	(20*4)	27.2	26.85	0.11
		7	(10*8)	32.2	29.19	0.17
		8	(7*12)	31.15	29.6	0.18
		9	(1*81)	30	28.85	0.19
Mortar	0.30%	10	(10*4)	52.7	51.35	0.1
		11	(5*8)	47.1	46.1	0.15
		12	(4*12)	49.35	49.1	0.12
		13	(1*49)	53.46	52.58	0.1
	Normal	14	Normal	54.15	53.12	0.19
	0.60%	15	(20*4)	54.1	53.3	0.18
		16	(10*8)	52.65	52.15	0.17
		17	(7*12)	54.78	53.2	0.19
		18	(1*81)	54.2	53.66	0.2

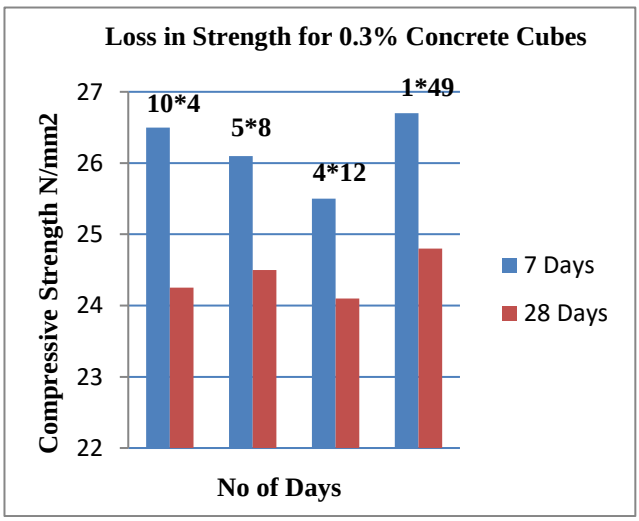

Fig 15: Loss in Strength for 0.3% Concrete Cubes

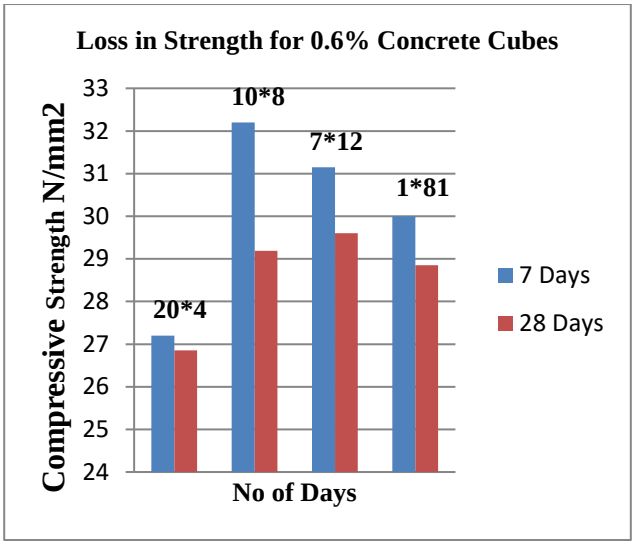

Fig 16: Loss in Strength for 0.6% Concrete Cubes

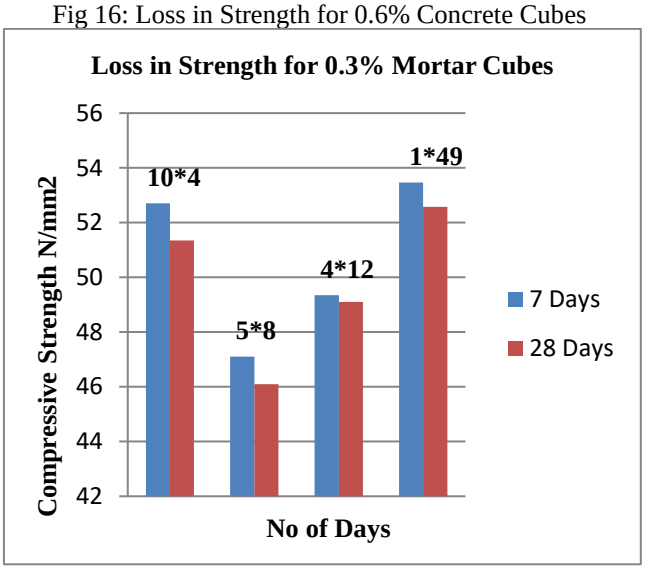

Fig 17: Loss in Strength for 0.3% Mortar Cubes

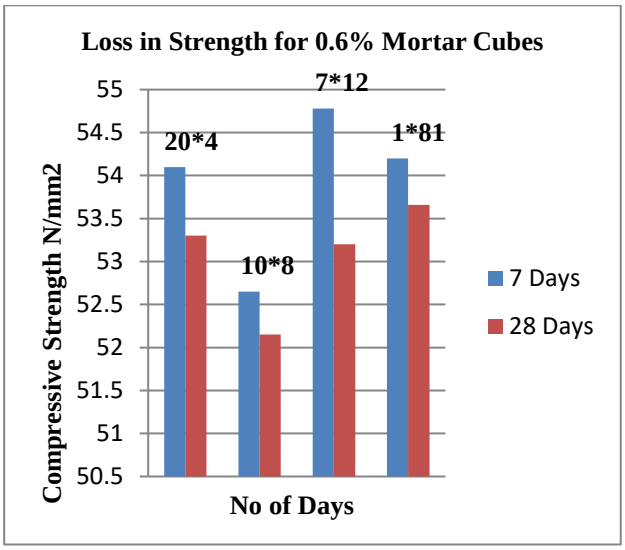

Fig 18: Loss in Strength for 0.6% Mortar Cubes

Table 7: Light Transmissibility Test (Using LUX Meter) for Translucent Concrete

Categories	% of POF	Sl no	Parameters	Transmissibility through Concrete in lux	% of Transmissibility passed in lux
Concrete	0.30 %	1	(10*4)	425	11.18
		2	(5*8)	386	10.15
		3	(4*12)	382	10.05
		4	(1*49)	530	13.94
	0.60 %	5	(20*4)	950	25
		6	(10*8)	969	25.5
		7	(7*12)	923	24.28
		8	(1*81)	1000	26.31
Mortar	0.30 %	1	(10*4)	436	11.47
		2	(5*8)	391	10.28
		3	(4*12)	396	10.42
		4	(1*49)	478	12.57
	0.60 %	5	(20*4)	940	24.73
		6	(10*8)	990	26.05
		7	(7*12)	903	23.76
		8	(1*81)	995	26.1

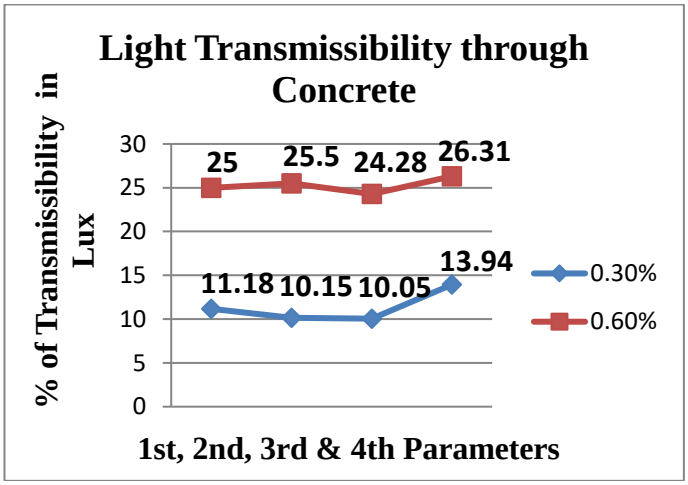

Fig 19: Light Transmissibility through Concrete

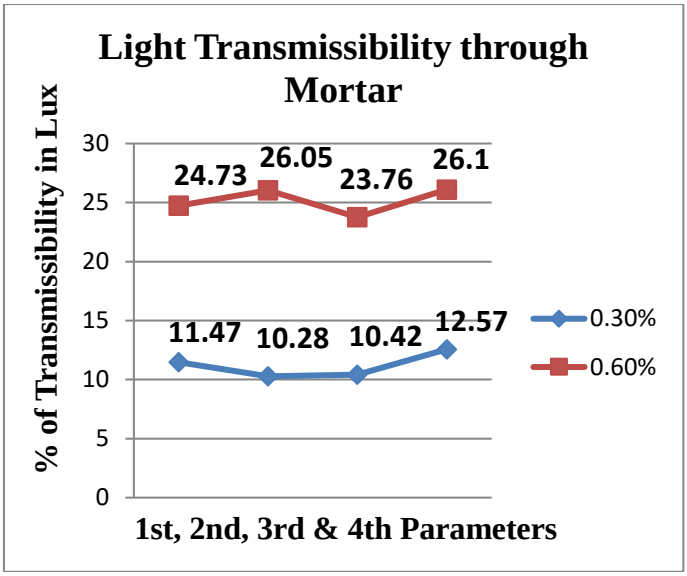

Fig 20: Light Transmissibility through Mortar

VI. CONCLUSION

1. From the test results it is observed that difference configuration of fibres in terms of its pattern definitely have significant influence on light transmission ability.
2. Experimental investigation reflects that with increase in percentages of optical fibres, light transmission ability through both concrete and mortar cubes are also increasing.
3. Results depict that, when compared with different parameters of optical fibres in terms of its location, the ability of 4th parameter to transmit light proves to be 20% more efficient than rest of the parameters.
4. When compared with concrete and mortar cubes, it is observed that light transmitting ability of mortar cubes are 10% more efficient than the concrete cubes.
5. From the test results it is noted that, there is no compromise in terms of strength of concrete and mortar cubes even if the percentage of optical fibres is increased when compared to conventional concrete.
6. Durability results shows that, optical fibres used in concrete and mortar cubes offer better resistance against various chemical actions such as acid resistance test and sulphate resistance test without affecting light transmissibility index.

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