



Fibre Testing and Reporting Review in Accordance with BS EN 14721:2005 +A1:2007

Introduction

Fibre content testing is often considered unreliable by Flooring Contractors and indeed Testing Houses due to variations in reported results and blame the test procedure itself or the poor training of the testing technician. The point to the fact that the correct number of boxes have been added to the individual truck and therefore the fibre quantity has to be correct. However this does not on its own mean that the fibres are evenly distributed throughout the mixed concrete due to poor mixing, worn blades or just not mixed for long enough. As a results the slab design may be compromised. Therefore a reliable and trusted testing procedure is essential.

The purpose of this report was to review and comment on the results of fibre tests carried out by a competent well trained technician in accordance with BS EN 14721:2005 +A1:2007 during casting of the slab poured at a Lidl warehouse in West Bromwich on the 18th august 2016 while being fully monitored for compliance to the standard by a Monofloor Consultant.

On Behalf of

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Test Procedure Records

3 number random tests were carried out over the days casting by Omega Testing Concrete Ltd in accordance with BS EN 14721:2005 +A1:2007.



(1) 3 samples taken from flowing discharge – Start / middle / end



(2) Samples are vibrated with Twintec Poker



(3) Each sample measured in calibrated container



(4) Each sample is washed out by sieve and placed in sample bag



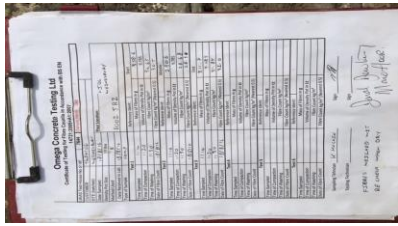
(5) Washed out sample is spread out on polythene sheet



(6) Fibres are picked out by Magnet and placed in sample bag



(7) Samples are weighed



(8) Results are recorded



(9) Fibre are added to truck by blowers while mixing at full revs

Results

Test (1)	Kgs/m3	Test (2)	Kgs/m3	Test (3)	Kgs/m3
Sample 1	43	Sample 1	36	Sample 1	37.5
Sample 2	36	Sample 2	28	Sample 2	33
Sample 3	37.5	Sample 3	31.5	Sample 3	31
Average	38.83	Average	31.83	Average	33.83
Overall average over 3 tests = 34.83kgs/m3 – ** Target 35kgs/m3 **					
Test (1) Mixing Time – not noted		Test (2) Mixing Time = 6 minutes including addition of fibres (about 4 minutes).		Test (3) Mixing Time = 8.53 mins including addition of fibres (about 4 minutes).	

Analysis of Results

Table 6.2: of TR34 4th Edition states:

Identity criteria for fibre content of fresh concrete

Application	Criterion
Every Sample	≥ 0.80 of specified minimum value
Average of three samples from a load	≥ 0.85 of specified minimum value

- From this criteria we can see that all the samples and average results comply.

Conclusions and Comments for Discussion

- There was variation in weights over the 3 samples typically with the first sample weighing considerably more than sample 2 and 3, except for Test 3.
The Flooring Contractors Method statement requires that each load is mixed for one minute per m³ at full revs after the addition of fibres. This was not the case in practise. Test 2 was mixed for 2 minutes only after the addition of fibres. Test 3 was mixed for 8.53 minutes after a request by Monofloor but includes 4 minutes mixing while fibres were added.
Results would certainly be more consistent with increased mixing as per the Method Statement.
- Each test took between 1.5 to 2 hours to complete. Therefore only a 3 to 4 tests could be carried out by one person in a pouring day.
- The person carrying out the tests needs to be well trained and not have other work duties to complete if the tests are to be completed properly.
- This single days testing is not enough on its own to be conclusive as the discharge method was into a pump and more tests need to be done on a direct truck discharge system for comparison

Conclusion

It can therefore be seen that the standard BS EN 14721:2005 +A1: for measuring fibre content works very well when carried out methodically by a well-trained person given enough time without other duties. However it can also be seen that the fibre dispersal is not evenly distributed throughout the mixed concrete. This can be explained by a lack of attention to the correct mixing times being adhered to with the distribution improving with extra mixing.

It's clear that proper Quality Control procedures need to be implemented to ensure correct procedures are adhered to before final discharge of mixed concrete.

Donal Dowling

14th October 2016