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ADHESION TO MCGRATH'S CEMFLOOR CT25

BY

RESEARCH AND DEVELOPMENT

Laboratory Report

1. Objective.

The objective of this study was to determine the strength of adhesion to Cemfloor CT25 concrete slabs manufactured by M^cGraths.

2. Method.

A pallet of Cemfloor CT25 screed cast into an average of 200x300x60mm slabs was submitted for testing.

The slabs were prepared for testing by light abrasion only i.e. the slabs were not primed before use.

EN standard tiles were fixed to the slabs using BAL Green Screed Adhesive, BAL Rapidset Flexible Grey and BAL Stone and Tile PTB Grey according to the procedures defined in EN 12004.

EN standard concrete slabs were also tested for reference.

Adhesion strengths were determined after the following test conditions:

2.1 Initial adhesion to EN 1348

28 days at 23^oC and 50% R.H.

2.2 Adhesion after water immersion to EN 1348

7 days at 23^oC and 50% R.H followed by 21 days immersion in water.

2.3 Adhesion after heat ageing to EN 1348

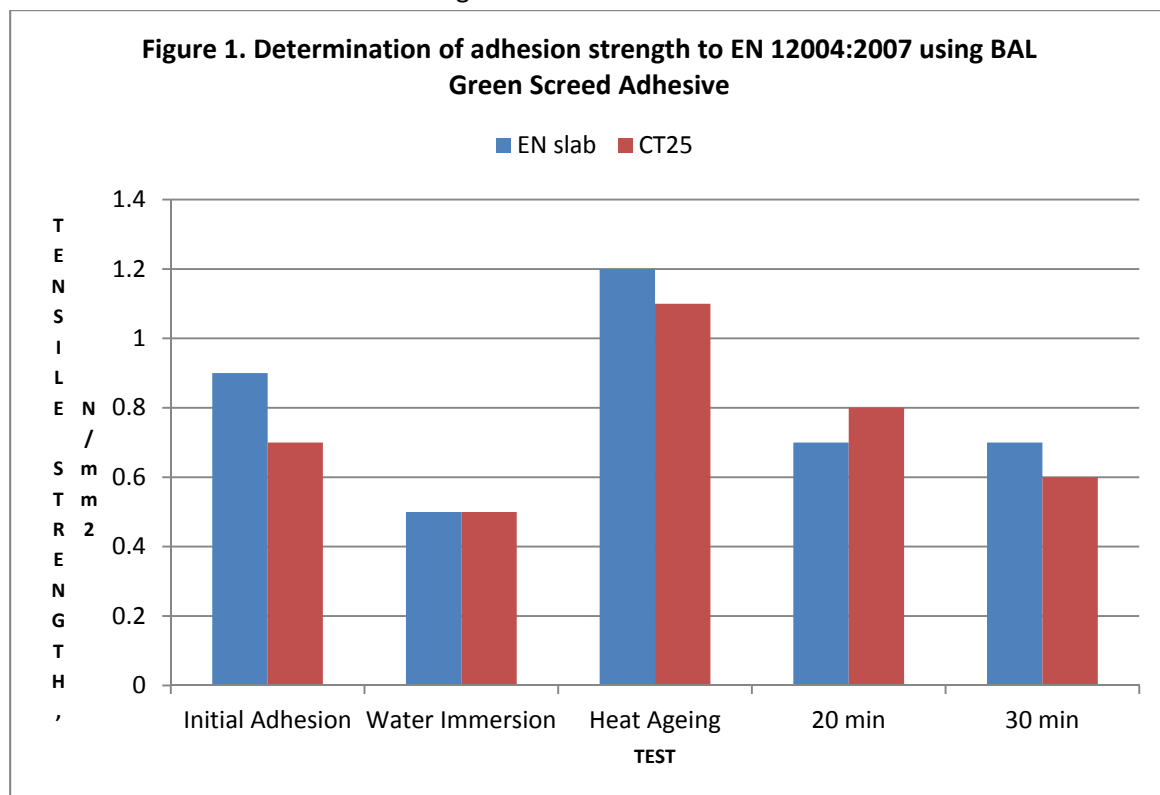
14 days at 23^oC and 50% R.H followed by 14 days at 70^oC followed by 1 day at 23^oC and 50% R.H.

2.4 Open time after EN 1346

Tiles were applied after 10, 20 or 30 minutes, with adhesion tested after 28 days at 23^oC and 50% R.H. N.B. as the slabs will not be recommended for external use, freeze-thaw tests were not conducted.

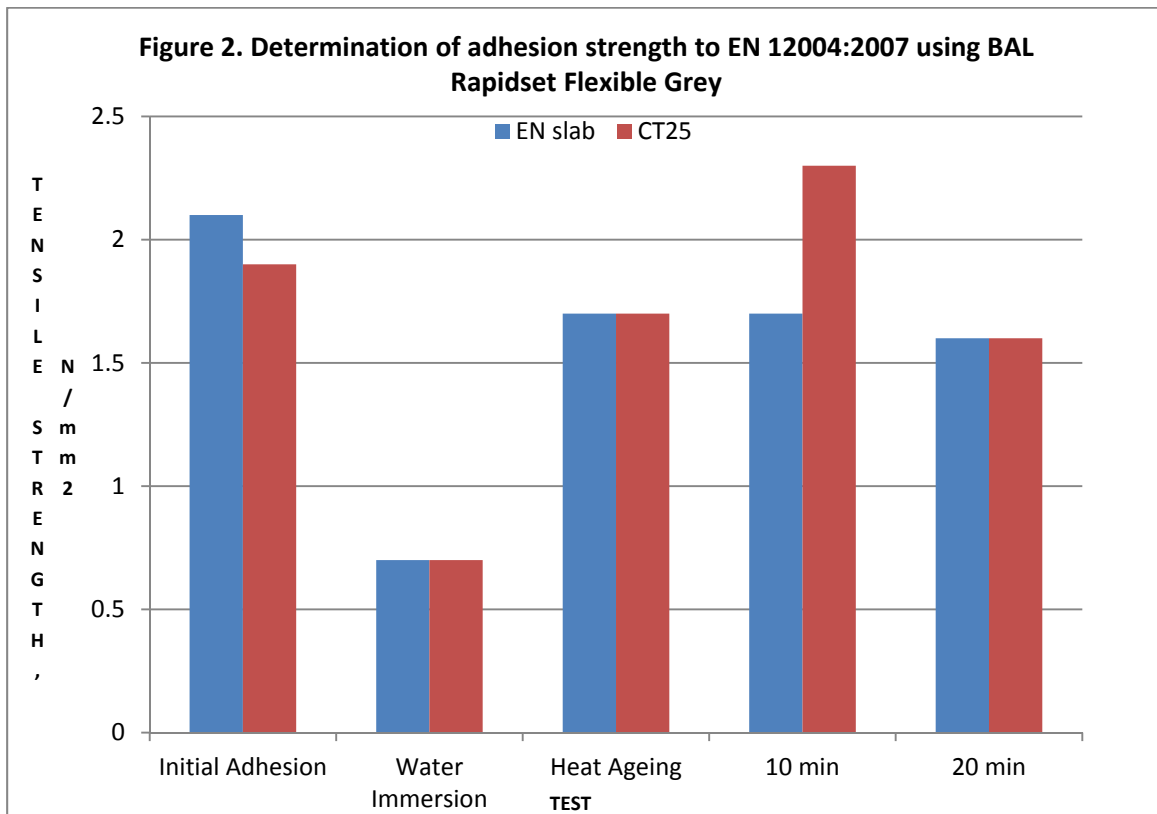
3. Results and discussion.

3.1 BAL Green Screed Adhesive testing to EN 12004:2007.



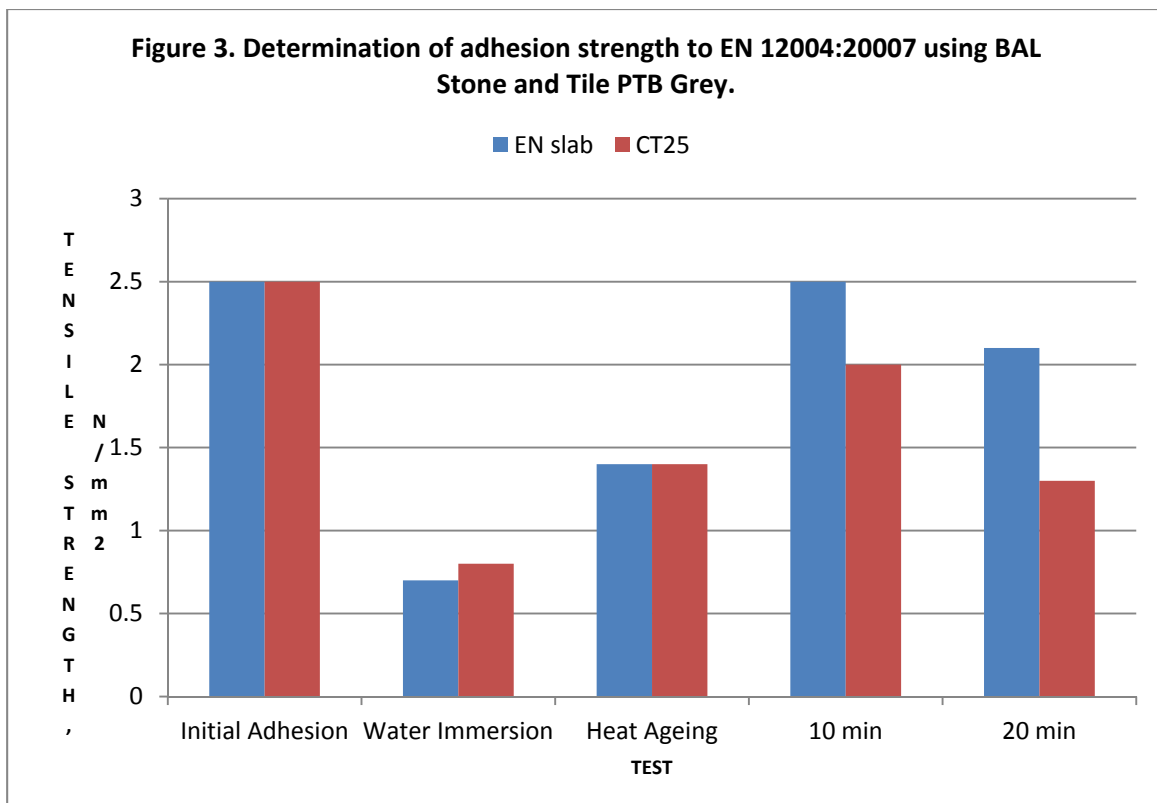
From the results presented above, it is evident that adhesion strengths of BAL Green Screed Adhesive to Cemfloor CT25 are equivalent to those achieved to a EN concrete slab.

3.2 BAL Rapidset Flexible Grey testing to EN 12004:2007.



From the results presented above, it is evident that adhesion strengths of BAL Rapidset Flexible Grey to Cemfloor CT25 are equivalent to those achieved to a EN concrete slab. N.B. adhesion strengths after water immersion are lower than anticipated for both slabs and will be repeated.

3.3 BAL Stone and Tile PTB Grey testing to EN 12004:2007.



From the results presented above, it is evident that adhesion strengths of BAL Stone and Tile PTB Grey to Cemfloor CT25 are equivalent to those achieved to a EN concrete slab. Whilst the open time at 20 minutes is reduced with the CT25 slab, the strength obtained is significantly greater than 0.5Nmm^{-2} . N.B. adhesion strengths after water immersion are lower than anticipated for both slabs and will be repeated.

3.4 Modes of failure.

The modes of failure in the adhesion tests are summarised below. The mode of failure is denoted either as Cohesive (CF) or Adhesive (AF), with the percentage of the type of failure indicated as a subscript.

3.4.1 BAL Green Screed Adhesive

	EN SLAB	CT25
INITIAL ADHESION	CF ₉₅	CF ₈₀
WATER IMMERSION	CF ₆₅	CF ₅₅
HEAT AGEING	CF ₁₀₀	CF ₁₀₀

From the results presented above, it is evident that there is no significant difference in the mode of failure when tiles are fixed to EN and CT25 slabs using BAL Green Screed Adhesive.

3.4.2 BAL Rapidset Flex Grey

	EN SLAB	CT25
INITIAL ADHESION	CF ₁₀₀	CF ₇₅
WATER IMMERSION	CF ₇₀	CF ₈₀
HEAT AGEING	CF ₇₀	CF ₇₀

From the results presented above, it is evident that there is no significant difference in the mode of failure when tiles are fixed to EN and CT25 slabs using BAL Rapidset Flex Grey.

3.4.3 BAL Stone and Tile PTB Grey

	EN SLAB	CT25
INITIAL ADHESION	CF ₉₅	CF ₈₀
WATER IMMERSION	AF ₇₀	AF ₆₀
HEAT AGEING	AF ₆₀	AF ₇₀

From the results presented above, it is evident that there is no significant difference in the mode of failure when tiles are fixed to EN and CT25 slabs using BAL Stone and Tile PTB Grey.

4. Conclusions.

From the results presented it is concluded that, when tiles are fixed to EN and Cemfloor CT25 concrete slabs using BAL Green Screed Adhesive, BAL Rapidset Flex Grey and BAL Stone and Tile PTB Grey :

- (i) there is no significant difference in initial adhesion strength, water immersion strength, heat ageing strength or open time,
- (ii) there is no significant difference in the mode of failure when the above systems are tested to destruction,

- (iii) providing that the Cemfloor CT25 samples submitted are representative and that the guidance given by BAL for specific installations, including curing times, is applied, the above adhesives may be used to fix tiles to Cemfloor CT25 in internal conditions.