

BOND-TEST

Selection of control sections and Rule of decision for acceptance

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The following guidelines are Danish practice for adhesion testing with the BOND-TEST utilizing the 75mm (3") in diameter disc.

1. Selection of control sections

- 1.1 The size of the control section is chosen by the owner or the owners representative.
- 1.2 The contractor may chose to subdivide a control section, but she/he cannot add control sections into one.
- 1.3 The material property and other characteristics affecting the adhesion strength have to be the same within a control section.
- 1.4 A control section has to be cast continuously. No change in production or transition to other surface preparation or materials is allowed. Changing weather conditions from day to day will cause the size of a control section to be related to the production in e.g. one day.
- 1.5 No different types of structural elements are allowed in one control section
- 1.6 The size of a control section has to be related to the consequence of rejection.
- 1.7 The maximum size of a control section is, in general, 200 – 500 m² (1,800-4,500 ft²) for mortar overlays etc., and 1500 m² (13,500 ft²) for epoxy overlays.

2. Rule of decision for acceptance

- 2.1 The tensile strength of the substrate - after surface preparation - has to be tested before the overlay is applied. This tensile strength has to exceed the required adhesion strength.
- 2.2 Testing is made at random at three (3) locations within a control section. One test is performed at each of the three locations.
- 2.3 Should the tensile strength fall below the required adhesion strength the reason has to be found. If the reason is cracking caused by the surface preparation another surface preparation method has to be applied and re-testing performed. If a low tensile strength is caused by a generally weak substrate, the owner has to be notified and a lower requirement for the adhesion strength has to be decided upon.
- 2.4 After the overlay has been applied, testing is repeated, again at three (3) random locations within the control section. Again, one test is performed at each of the three locations.
- 2.5 If the failure is either in the substrate or in the adhesion layer at a strength higher than the required adhesion strength, the test is accepted.
- 2.6 If the failure is in the overlay at a higher strength than the required, the test is not accepted before it is reassured that the partial coring has been performed past the adhesion zone. This is done by breaking the partial core, removing it and visully inspecting it.
- 2.7 If the failure is in the overlay at a lower strength than the required, the rule in clause 4.6 applies.
- 2.8 Should one test result fall below the required strength another two tests are made within one

meter (3 ft) from the failed one. If any of them fails to meet the requirement additionally two tests are made within one meter (3 ft) from the failed one, etc.

2.7 Subdivision of a control section is in this manner made in rejected and accepted sections.

3. Consequence of rejection

3.1 The overlay in a rejected section is removed and a new overlay applied.

3.2 Re-testing of a repaired overlay is performed following the same rules as stated above.

4. General comments

4.1 The BOND-TEST has to be performed according to the instrument manufacturers procedure and instructions.

4.2 The test equipment has to be functional and the hydraulic pullmachines calibration table has to be maximum one year old.

4.3 The drill depth past the adhesion zone has to be minimum 35 mm.

4.4 The preferred disc size is 75 mm (3") in diameter.

4.5 The requirement for adhesion strength at 28 maturity days is in general 1.6 MPa (230 PSI) or higher, depending on the structural application.

4.6 If testing is performed at an earlier age than 28 maturity days, a trial casting has to be performed prior to start-up of the project, and the adhesion strength in dependence of maturity has to be established. The trial casting has to be performed with the same surface preparation and overlay material to be used in the project. Such tests of a trial casting has also to establish at what minimum maturity the test can be done without causing failure in the overlay.

4.7 In general, testing is made on mortar overlays after 2-3 days and on epoxy overlays after 1 day.

4.8 Before BOND-TEST is performed, visual inspection is made for cracking and hammer tapping or chain dragging is carried out on the surface to detect shallow delaminations. Deeper delaminations are detected by impact-echo.

4.9 If more than one overlay is applied, testing is performed after each coat.

4.10 Repair of holes left in the surface after testing is made by using a polymér modified mixture.

4.11 Anchor holes for attachment of the drill rig for the partial coring may be avoided by using the suction plate supplied with the CORECASE drill equipment.

CGP/TRE