

# Bond Strength Test: Cement-Based Sealant VS Epoxy-Based Sealant



floorheating

## Introduction

In the quest for superior adhesion strength when sealing underfloor heating pipes, a recent laboratory investigation conducted by Eurovite has concluded that cement-based sealing compounds are superior to epoxy-based sealing compounds when applied over sealed & primed underfloor heating pipes covered with a levelling compound. Initiated by JK Floorheating, the study aimed to decipher the optimal bonding capabilities of flooring compounds on a prepared substrate.

Our question was simple:

**Would the cement or epoxy based sealant adhere better to an identical screed floor?**

## Preparation

The experiment comprised of a test specimen piece, prepared in advance and comprising of a screed floor with milled heating pipes, sealed, primed and covered with Foby+ Egaline Pro.



Milled sample with JK floorheating tube



Epoxy on side A

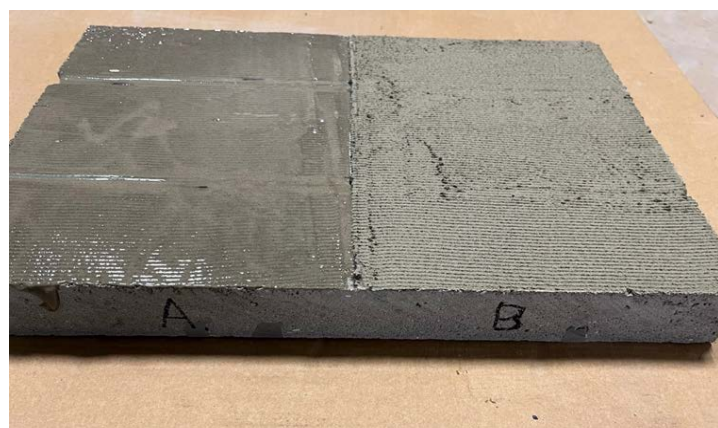


JK primer on side B



Leveling compound hardened

The two halves of the specimen were labelled A & B.



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## Method

Researchers applied epoxy glue to 12 traction anchors, mounting six on each half to the test piece. Once the glue had set, an adhesion strength meter was attached to pull on the anchors until detachment, with the force required to detach the traction anchors noted and converted to N/mm<sup>2</sup>.

Additionally, the nature of detachment, whether adhesive or cohesive, was noted, providing invaluable insights into the bonding mechanisms at play.



AF – Adhesive Failure. The bond between two materials loosens, the two materials are named.  
CF – Cohesive failure. The material itself breaks. This material is named.

Piece A (Epoxy)	Force (N/mm <sup>2</sup> )	Break type
A1	1.6	60% CF levelling compound, 40% AF levelling surface
A2	1.5	100% CF levelling compound
A3	1.8	90% CF levelling compound, 10% AF levelling surface
A4	2.0	80% CF levelling compound, 20% AF levelling surface
A5	1.4	70% CF levelling compound, 30% AF anchor epoxy leveling compound
A6	1.3	20% CF levelling compound, 80% AF levelling surface
Average	1.6	

Piece B (Cement)	Force (N/mm <sup>2</sup> )	Break type
B1	1.5	100% CF levelling compound
B2	1.8	80% CF levelling compound, 20% AF anchor epoxy leveling compound
B3	1.4	50% CF levelling compound, 50% AF levelling surface
B4	1.7	100% CF levelling compound
B5	2.1	100% CF levelling compound
B6	1.5	70% CF levelling compound, 15% AF levelling surface, 15% underground pipe
Average	1.7	

**Note:** The heating pipe appears to be located higher in the screed at B6. As a result, the surface under the levelling compound has been pulled loose and the pipe has become bare.

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### Conclusion

The levelling compound adheres better to piece B than to piece A, proving that the cement-based compound provides stronger adhesion than the epoxy-based compound.

Although the levelling compound mainly breaks on both sides, more bare pieces of surface can be seen on piece A than on piece B. You can also see that the bond strength decreases when more levelling compound comes loose from the surface. The bond strength is therefore also higher on average for piece B.



A3 epoxy



B3 cement