# Technical Update: Fibre reinforcement to concrete toppings

This technical update provides additional guidance relating to fibre reinforcement in concrete. It is important that all workmanship carried out during construction is completed in accordance with the relevant tolerances so that the required finishes are achieved.

## Introduction

As well as anti-crack control, fibre reinforcement is often put forward by a developer as an alternative to providing steel reinforcement in concrete toppings (reinforced concrete screeds). There are two types of 'fibre reinforcement' available on the market: 'micro-polymer fibres' and 'macro fibres'.

A typical scenario where the use of fibre reinforcement may be proposed in concrete toppings is:

Above insulated floor systems over a beam and block type floor structure: where a reinforced screed (or structural concrete topping) is required over the insulation to allow the typical floor loadings (furniture, fittings, etc.) to be spread across the insulation units which in turn are supported by concrete beams underneath.

## Warranty position

Of the two types, micro-polymer fibres have not been proven to be acceptable for use as an alternative method of providing structural reinforcement to concrete toppings.

'Macro fibres' may be acceptable for use in structural screeds, but only in the following circumstances:

1. The manufacturer of the macro fibre reinforcement system must provide a valid third party product approval certification which must identify the exact fibre reinforcement mixing requirements and the quality management procedures necessary to achieve this.
2. Evidence must be provided that the alternative reinforcement will achieve a service life of 60 years.
3. The third party product approval for the macro fibre must state it can be used '**as a substitute reinforcement'*** and a structural engineer can prove this. Otherwise, we will assume it is not suitable as a substitute for actual steel reinforcement.

*Please note:

- The third party product approval for the fibre reinforcement must be carefully checked to confirm it can be used for that particular application, i.e. **as an alternative to steel reinforcement**.
- It is imperative that the wording in the 'scope of use' section of third party product approval certificates is checked. As a number of product certificates actually say 'contributes to anti cracking properties' – that is not the same as being an alternative to steel reinforcement and therefore is not acceptable.

## Quality management requirements

If a macro fibre product has third party approval for use as an alternative to steel reinforcement, the dosage and on site mixing requirements will need to be carefully controlled. To satisfy warranty requirements, an approved contractor accepted by the macro fibre manufacturer must be responsible for controlling the process of mixing the fibre into the concrete to ensure it will achieve the correct specifications for the project.

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## Summary

Where fibre reinforcement is proposed, macro fibre fibres may only be used as a substitute for reinforcement if:

- there is a UKAS accredited (or European equivalent) third party product approval clearly stating it can be used for that purpose. Statements saying 'contributes to anti cracking properties' is not confirmation of being suitable for being used as a reinforcement alternative, and
- the use of the fibre reinforcement must be strictly controlled and
- is approved by our warranty products acceptability process.



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