Technical Update: Fibre reinforcement in lieu of traditional steel reinforcement

Introduction

This technical update provides additional guidance relating to the use of fibre reinforcement in concrete, in lieu of traditional steel reinforcement.

Current technical standards

There are two current standards covering the requirements for fibres for concrete:

- BS EN 14889-1:2006 Fibres for concrete — Part 1: Steel fibres — Definitions, specifications and conformity
- BS EN 14889-2:2006 Fibres for concrete — Part 2: Polymer fibres — Definitions, specifications and conformity

In the “scope” section of these standards the following is stated:

“This Part of EN 14889 specifies requirements for polymer fibres for structural or non-structural use in concrete, mortar and grout.

NOTE: Structural use of fibres is where the addition of fibres is designed to contribute to the load bearing capacity of a concrete element. This standard covers fibres intended for use in all types of concrete and mortar, including sprayed concrete, flooring, precast, in-situ and repair concretes.”

The above standards only provide guidance on the requirements of fibres and their evaluation of conformity, not how they can be adopted as alternative reinforcement in structural design codes.

Current design standards

At the time of writing (June 2021) there is no known current British Standard informing how to carry out a structural design of an element of construction, i.e., foundation, ground floor, upper floor, cladding panels or structural frame, etc., using fibre reinforcement instead of traditional steel reinforcement.

Warranty position

From a warranty perspective where traditional steel reinforcement is to be replaced with fibre reinforcement, prior to works commencing on site evidence must be provided that the alternative reinforcement:

- Holds a valid third-party accreditation from a UKAS accredited testing body which is deemed satisfactory to our structural engineering department
- The third-party certification confirms the scope that it can be used as alternative reinforcement for the specific application proposed

The accreditation must also confirm the following as a minimum:

- The product will have a minimum durability of 60 years

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- The scope of use/application that the fibre has been assessed for
- The third-party product approval for the fibre must clearly state that it has been assessed so that it can be used “as a substitute for traditional steel reinforcement”
- The certificate information and certificate holder must provide sufficient data to allow a structural engineer to provide a design

Summary

Prior to the use of any fibre reinforcement, in lieu of traditional steel reinforcement, the developer is advised to seek confirmation from our structural engineering department, through our site surveyor, that the proposals would be acceptable to the warranty provider.

Every care was taken to ensure the information in this article was correct at the time of publication (June 2021). Guidance provided does not replace the reader’s professional judgement and any construction project should comply with the relevant Building Regulations or applicable technical standards. For the most up to date Premier Guarantee technical guidance please refer to your Risk Management Surveyor and the latest version of the Premier Guarantee Technical Manual.

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