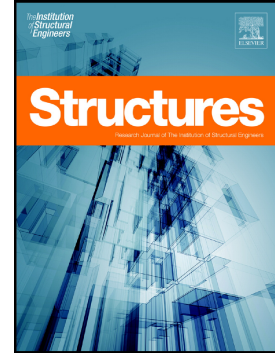


Accepted Manuscript

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PII: S2352-0124(18)30068-7
DOI: doi:[10.1016/j.istruc.2018.07.004](https://doi.org/10.1016/j.istruc.2018.07.004)
Reference: ISTRUC 298
To appear in: *Structures*
Received date: 19 February 2018
Revised date: 23 May 2018
Accepted date: 12 July 2018

Please cite this article as: Mohamed Elchalakani, M.F. Hassanein, Ali Karrech, Sabrina Fawzia, Bo Yang, V.I. Patel , Experimental tests and design of rubberised concrete-filled double skin circular tubular short columns. Istruc (2018), doi:[10.1016/j.istruc.2018.07.004](https://doi.org/10.1016/j.istruc.2018.07.004)

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EXPERIMENTAL TESTS AND DESIGN OF RUBBERISED CONCRETE-FILLED DOUBLE SKIN CIRCULAR TUBULAR SHORT COLUMNS

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ABSTRACT

The adequacy of rubberised concrete (RuC) for use in structural columns is, currently, investigated experimentally through the use of cold-formed double-skin circular steel tube confinement. The RuC is of particular interest because the aggregate can be sourced from recycled tyres, so it is a form of sustainable concrete, and it possesses superior mechanical properties to conventional concrete such as increased ductility and energy absorption. Rubberised concrete does have one major issue in that it has a low compressive strength compared to normal concrete, which limits its application. The aim of this study is to evaluate the effectiveness of confinement in overcoming this mechanical deficiency by using rubberised concrete-filled double-skin tubes (RuCFDST). The experimental program involves testing and measurements of key mechanical properties including compressive strength, hoop and axial strains, and compressive load-deflection curves. A total of 15 composite specimens were examined to ascertain the varying properties of single-skin, double-skin, confined, unconfined, standard and rubberised concrete. Recycled rubber particles ranging from two to seven millimeters in size were used to replace 15% and 30% of

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