

Processing of submissions using Structural Aluminium

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Introduction

Aluminium alloy is renowned for its advantages of being lightweight and durable and has been widely used for façade and cladding works. Ancillary submissions involving aluminium alloy constitutes about one-third of BD's total structural submissions.

Some RSEs adopt a hybrid approach for design using CP 118 while making reference to BS 8118 for materials. In fact, there are numerous grades of aluminium alloys that they are rather different in mechanical properties for slight changes in their chemical composition. A desktop study suggested that a hybrid approach is still found acceptable in terms of safety design. In the text, the commonly used aluminium alloy grades are identified after consultation with stakeholders in the local industry.

In the circumstances on the withdrawal and superseding of relevant materials standards, such as BS 1470 and BS 1474, by a number of BS EN standards, SEs always have difficulty in acquiring the current standards for processing structural submissions involving aluminium alloy.

To facilitate colleagues in this respect, this document has summarized the most commonly used aluminium alloy grades with inclusion of their respective mechanical properties and chemical composition. If other uncommon aluminium alloy grade is proposed, the RSE should provide detailed information on job basis.

Despite welding of aluminium alloy is rare, relevant updated BS EN reference standards are given in the document in case welding is proposed.

Regarding the design aspect, a comparison of CP 118 (permissible stress approach) and BS 8118 (ultimate limit state approach) is conducted. The findings have demonstrated that CP 118 is generally a conservative design code. We have no intention to force the RSE to adopt BS 8118 in their design.

Recommendations on good practices in processing submissions related to the use of structural aluminium are suggested. The sampling rate for testing is recommended but as a minimum requirement only. It is at the RSE's discretion to specify more or further tests for ensuring the quality of the material.

This document aims to provide a better understanding on the use of aluminium alloy and serves as a reference for colleagues in processing related structural submissions.