

## Spreadsheets for the Analysis of Mode I Structural Adhesive Tests

### Some user instructions

1 These Excel spreadsheets are available to down-load free of charge. They will run on a PC and require **Microsoft Excel version 97**, or later. They should be used in conjunction with the Structural Adhesives Test Protocol for Mode I loading which is also available on this site.

2 Three Microsoft Excel Spreadsheet files have been created in to a Workbook format. These are:

\*TDCB Spreadsheet –for the tapered double cantilever beam specimen.

\*DCB (LB) Spreadsheet –for the DCB specimen where the load is applied through loading-blocks.

\*DCB (DH) Spreadsheet –for the DCB specimen where the load is applied through holes drilled directly through the substrates.

3 The workbooks consist of a first sheet named TAB (for table) which is the spreadsheet into which you enter your test data. All values of  $G_c$  are then calculated in this sheet. Subsequent sheets plot the data and should be self explanatory.

4 Enter the TAB sheet. Input general data into *Input Box 1*, specimen data into *Input Box 2*, cure and test data into *Input Box 3* and test data into *Input Box 4*. Leave all other cells alone. You will not be required to enter any other data in any other part of this sheet.

**note:** If you accidentally erase formulae in a *calculation cell*, i.e. any cell outside boxes 1-4, it is recommended that you delete the file and start again. Of course, you may enter text into the *Observations and Comments Box* also.

**5 Having entered your load, displacement and crack length test data into *Input Box 4*, you may find that there are more rows in this table than required. If this is the case, highlight the rows, starting from *Input Box 4* and extending across to the far right-hand side of the spreadsheet. Then select delete from the Edit Menu, answering “shift cells left” when required.**

6 The regression analysis will now calculate the required parameters for the number of data points entered.

7 It is not recommended that you enter more data sets than can be inserted into *Input Box 4*.

8 The workbooks will automatically plot the R-curves, the linear regression data and the E-modulus or compliance values as a function of crack length.

**Any comments on the spreadsheets would be welcome, and should be sent to Dr Bamber Blackman at Imperial College [b.blackman@ic.ac.uk](mailto:b.blackman@ic.ac.uk)**