

## McKee's Formula

Measurement of compression strength, using the McKee's formula.

### Background of McKee's formula :

Before World War II, engineers at the British Air Ministry established a statistical relationship between the failure load of a panel and its buckling load and crushing strength.

Boxes are analogous with a similar relationship between Box Compression Test strength (BCT) and the buckling load and the Edge Crush Test strength (ECT) of the corrugated board. This is called McKee's formula.

In McKee's formula the empirical relationship is reduced by substituting the buckling load with the bending stiffness because they are almost proportional. McKee also found that there is a correlation between the material and geometric properties of the combined board and its bending stiffness. The box compression strength is given by McKee's formula as follows:

### McKee's formula:

$$BCT = a \cdot ECT^b V_{MD} D_{CD}^2 Z^{2b-1}$$

**a, b:** constants determined experimentally

**Z:** perimeter of the box

**D:** bending stiffness of the board

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