

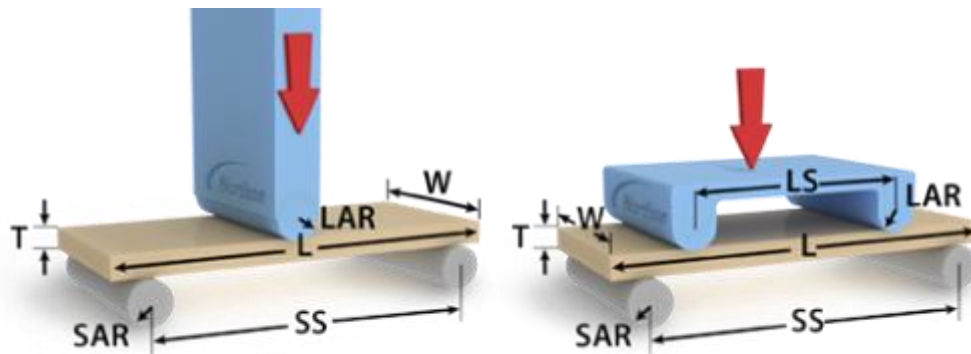
## Flexural test

Flexural testing is used for measuring the properties of materials, particularly composites and polymers.

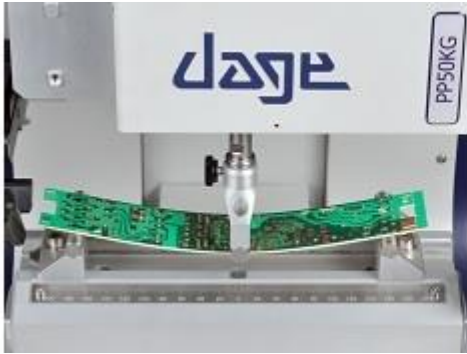
Flexural testing is used to determine the elastic modulus and failure strain of laminates. The manufacturing process for laminates involves a number of steps that impact the mechanical properties of the final board. Lead free solders transmit larger strains to the bond pad which can produce cracks in the laminate.

Lead free solders are reflowed at higher temperatures and this leads to greater thermal strain.

Cracks can extend if the board is subjected to high strains, shock or thermal cycling, with eventual failure of connections.



The Nordson DAGE 4000Plus micro materials test system can perform both three and four point bend tests. External sensors can be used to sense displacement or strain. In the case of printed circuit boards, electrical resistance can be used to terminate the test once a connection has failed.



Tests can be performed to:

- ASTM D790 and D6272
- IPC-TM-650
- SEMI G86-0303
- JEDEC 9702

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