

Short Abstract Proposal: Test development for delamination propensity

Roman Popil

July 2012

Glue joints fail in some packaging applications from a shearing action where the linerboard material is observed to delaminate. This suggests the cause may be attributable to poor bonding in the ZD leading to the separation of fiber layers in the sheet when placed under combined tension and shear. Conventional testing such as the ZDT and Scott bond use the application of double-sided tape which limits testing to moderate strength values. These simple routine tests do not provide ZD load deformation behavior which is more diagnostic than just a simple strength value. Ultrasonic ZD transmission measurements now available commercially have been shown to correlate well with ZD strength and can be used more conveniently for quality control for linerboard in production. A new test method is required combining tension with shear of glued areas in curved geometry which will provide an optimum predictor for glue joint performance in the field. The project proposes to investigate a series of linerboards with reported varying field performance to ascertain the differences in load-deformation behavior that leads to shear failure of the linerboard. Various candidate alternate test methods will be explored on the basis of this investigation which will lead to a production quality control test method and a simulated end-use test.