



Re-Certification of Adhesive Closed Products

(ZT06-98-001)

The Problem

The Zippertubing Company identifies all products containing pressure sensitive adhesives with a shelf life label indicating that the product shall be consumed within one year from the date of manufacture. Most adhesive systems have shelf lives that range between 12 to 24 months. Zippertubing limits the finished product life to one year because the raw materials used to manufacture the product may be several months old prior to fabrication. Finished products, which have manufacturing dates exceeding the one-year limit, may suffer from reduced adhesive bond strength due to air and moisture migration between the paper release liner and the adhesive mass. The paper release liners main function is to allow the customer to choose the time when the bond joint is to be made and keep contaminants away from the adhesive surface until that time. If the shelf life date is exceeded, air and moisture may have begun to migrate under the release liner and allow the volatile component of the adhesive to flash off into the atmosphere (dry out). This condition may significantly reduce the amount of surface area that still has good adhesive characteristics. Once the release liner has been removed and the bond joint has been made, the air and moisture migration issue becomes extremely slow (many years). Thus, there is no relationship between shelf life and service life. In an ideal world a customer would procure only enough material that can be consumed within the stated shelf life period. Unfortunately, the real world doesn't always cooperate.

Material Evaluation

If a customer finds themselves with materials that are out of date there are several steps that can be performed by the customer to determine if the material is still acceptable or should be scrapped.

The first step should be to physically examine the material that is out of date and determine the following:

- 1) Has the material been stored under the proper conditions specified on the Shelf-Life label?
- 2) Is the product still in its original packaging?
- 3) Is the original packaging film still sealed?

- 4) Is the original packaging film bright and clear?
- 5) Does the paper release liner covering the adhesive mass have a uniform appearance.

The ideal condition would be that the answer is “yes” to all of the above questions. If so, proceed to the Testing Section. If the answer is “no” to question 5, scrap the material outright.

Material Testing

Qualified Engineering or Quality Assurance personnel should perform the following tests. Cut several 12-inch samples from all the affected lots and seal the samples closed per the appropriate Zippertubing installation instructions for that product. Note: “PRT” product line materials shall be heat processed as specified in the appropriate Zippertubing process specification. Control samples should also be cut from lots that are within the stated shelf life limits. Allow all sealed samples to age for 24 hours at normal room temperature after being sealed. Cut the samples lengthwise (parallel to the seam line) using a pair of scissors approximately 180 degrees away from the adhesive seam line. Then cut the material perpendicular to the seam line into 1.0 inch wide pieces. This process will create Lap-Shear specimens that can be tensile tested. Use a calibrated tensile test machine and pull the samples at a rate of 4.0 inches per minute until failure. Record the failure strength values and calculate the average strength for each out of date lot and the control lot. All out of date lots that show average tensile values of 90% or better compared to the control specimens should be considered acceptable for use. Material lots that yield average values less than 90% of the control specimens should be scrapped.

Re-Certification

Acceptable lot materials should be re-certified for use for no more than 6-months from date of test. Inventory control should be adjusted to insure that re-certified materials are consumed first before processing any new materials. After the six-month re-certification period has passed it is permissible to perform the re-certification test process one more time. Materials that pass the second test can be re-certified for use for a maximum of 3-months. After the end of this 3-month period, quality assurance should scrap all remaining out of date materials and insure that only new materials that are within the original shelf-life limits are used.

If you have any questions regarding any of the issues described above please contact the Zippertubing Engineering Department at (800) 321-8178.