TECHNICAL DATA

REPORT DATE: 20 June 2011 **Complaint No.:** 100223 **REPORT N°:** 11-171.0-IC
REPORTED BY: I. Christopher **NOTEBOOK Ref.:** 206-22

CUSTOMER: Bedford Industries of Worthington (126786), Worthington, MN
SALES: Cindy Pettibone, Scapa NA, Windsor, CT

COMPLAINT: **100223** - Customer is experiencing issues with liner cracking breaking once laminated to their substrate and spooled.

PRODUCT: 154979: UP5040 6" x 1080ft
5 mil Reinforced Transfer Acrylic Adhesive on 76# Polycoated Kraft Liner

BATCH: WIN0024331

NOTES: Samples of laminated customer material of both "Old Liner" (previous lot) and "New Liner" (WIN0024331) were received in Technical Service on 6/20/2011.

EVALUATION:

UP5040

Master Roll:		Nothing abnormal in review of lot history.
Liner:		Nothing abnormal in review of lot history used in comparison to prior lots of liner.
Design Changes:	**Materials Used:**	No changes in base raw materials or components used.
	Any Changes:	Release system nomenclature from liner supplier – no change to release chemistry or components used.

"Old Liner"

Visual:	Material shipped to Windsor showed signs of liner/adhesive delamination in supplied format. Multiple sites within sample showed this.
Analytical:	Measurement of a cut section of final product and liner once removed, resulted with the liner being 0.45% shorter than the substrate.

"New Liner"

Visual:	Material shipped to Windsor showed signs of liner/adhesive delamination in supplied format along with several areas in which the liner split in the machine direction. Multiple sites within sample showed this.
Analytical:	Measurement of a cut section of final product and liner once removed, resulted with the liner being 0.77% shorter than the substrate.

PROBABLE CAUSE: Based upon review in Quality Assurance files and in Technical Service, the potential issues are as follow(s):

UP5040	No Material Issues have been observed.
Supplied Product	Tension levels being induced into the UP5040 during the lamination process. This is causing the product to relieve internal tension by: a) Adhesive delamination from liner causing the customer substrate to bulge b) Liner breaking to relieve the tension

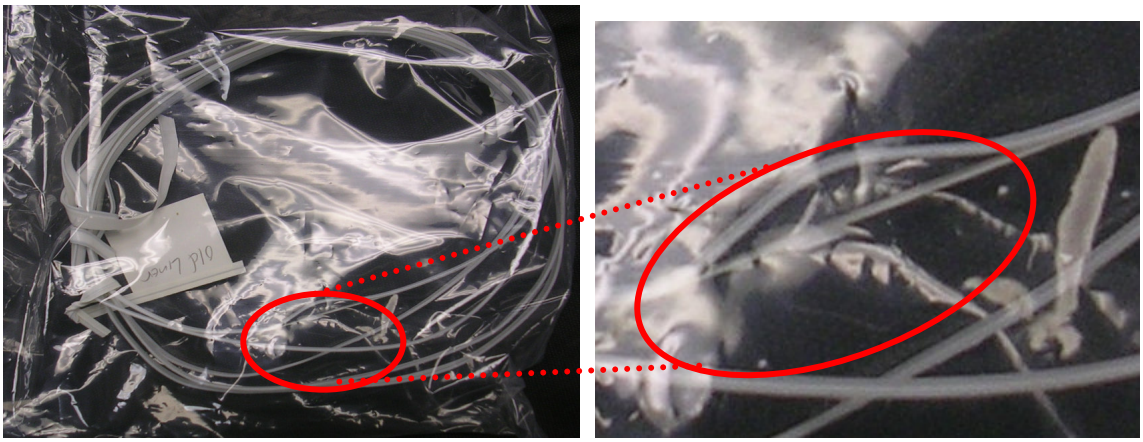
SUMMARY: Based on the investigation for this report, there are two potential methods to resolve this complaint:

a) Bedford Industries to reduce/monitor tension of materials before and after lamination.
b) Use of **ULTRA 6500** in place of **UP5040**. The proposed product was designed specifically for application in which the liner can see excessive stretch. **The adhesive system used in Ultra 6500 is not identical to that used in UP5040, but has a high degree of similarity in most application areas and in product performance.*

REPORT DATE: 20 June 2011 **Complaint No.:** 100223 **REPORT N°:** 11-171.0-IC
REPORTED BY: I. Christopher **NOTEBOOK Ref.:** 206-22

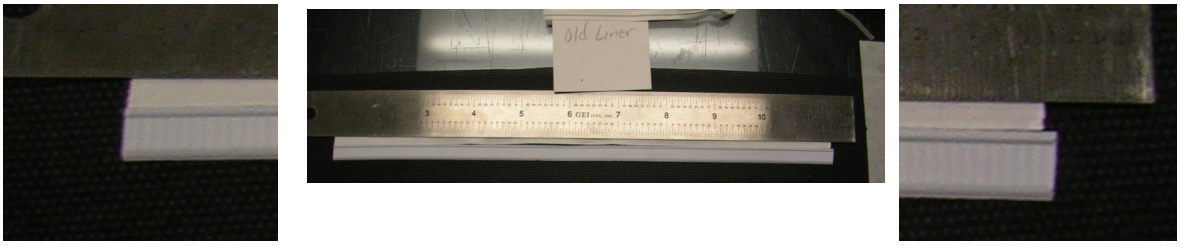
CUSTOMER: Bedford Industries of Worthington (126786), Worthington, MN
SALES: Cindy Pettibone, Scapa NA, Windsor, CT

IMAGE 1: Older Liner



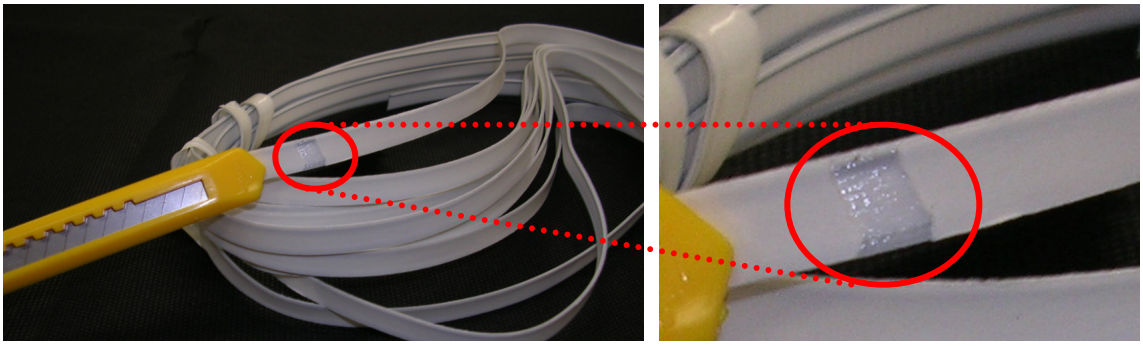
A) Multiple areas in which substrate & adhesive delaminated from liner.

IMAGE 2: Older Liner



A) Test sample of Liner Length v. Bonded Part Length

IMAGE 3: Newer Liner



A) Image of point of break in liner on final part assembly.

TIME:

Total:	**5 hours**
Conference Calls:	1 hr.
Material Investigation (Scapa):	1 hr.
Material Investigation (Customer):	1 hr.
Report Compilation:	2 hr.