Advantek Cover Tape (HUC0054-500) Qualification Report

AHEAD OF WHAT'S POSSIBLE™

Objective

- To migrate to new cover tape with same supplier of the carrier tape.

  Existing Carrier tape and cover tape have different supplier.

  FROM:
  Carrier Tape: **Advantek- SOT143-AV500.P6. P4 W8 L500**
  Cover Tape: **3M- 2675 W5.4 L475 ANTI-STAT**
  TO:
  Carrier Tape: **Advantek- SOT143-AV500.P6. P4 W8 L500**
  Cover Tape: **Advantek- HUC0054-500**

Existing Material

Cover Tape Information

Supplier: 3M

Part Number: 2675 W5.4 L475 ANTI-STAT

Dimension

- Width: 5.4 mm
- Length: 475 meters

Proposed Material

Cover Tape Information

Supplier: Advantek
Part Number: HUC0054-500

Dimension

Width: 5.4 mm
Length: 500 meters

Drawing → HUC0054-500 Drawing

SDS (Technical Data Sheet) → HUC and IP4035 C Material PBF-T

Material Comparison

Properties	3M (2675 W5.4 L475 ANTI-STAT)	Advantek (HUC0054-500)
Tape Width	5.4 mm	5.4mm
Tape Thickness	0.062 mm	0.050 mm
Tensile Strength	7,252 PSI	11,000 PSI
Transparency	Transmittance: 85.5%; Haze: 29.5%; Clarity: 80.6%	Transmittance: 90%; Haze: 22%; Clarity: 89%
Color	Transparent	Transparent
Surface Resistivity	Adhesive side: 1.0E10 Ohms/sq. Base film side: 1.0E10Ohms/sq.	Adhesive side: ≥1.0E5, <1.0E10 Ohms/sq. Base film side: ≥1.0E5, <1.0E11Ohms/sq.
Material Composition	Polyester + Synthetic polymer	Polyethylene + Polyethylene Terephthalate
CPK (Using Advantek- SOT143-AV500.P6. P4 W8 L500)	4.00	9.22

Proposed Material Validation

Dimensional Inspection

			Sample					
Description	**LSL**	**USL**	**1**	**2**	**3**	**4**	**5**	**Result**
Width	5.3mm	5.5mm	5.4	5.4	5.4	5.4	5.4	Passed
Thickness	0.04mm	0.06mm	0.048	0.050	0.050	0.048	0.050	Passed

Functional

Peel Strength Test →

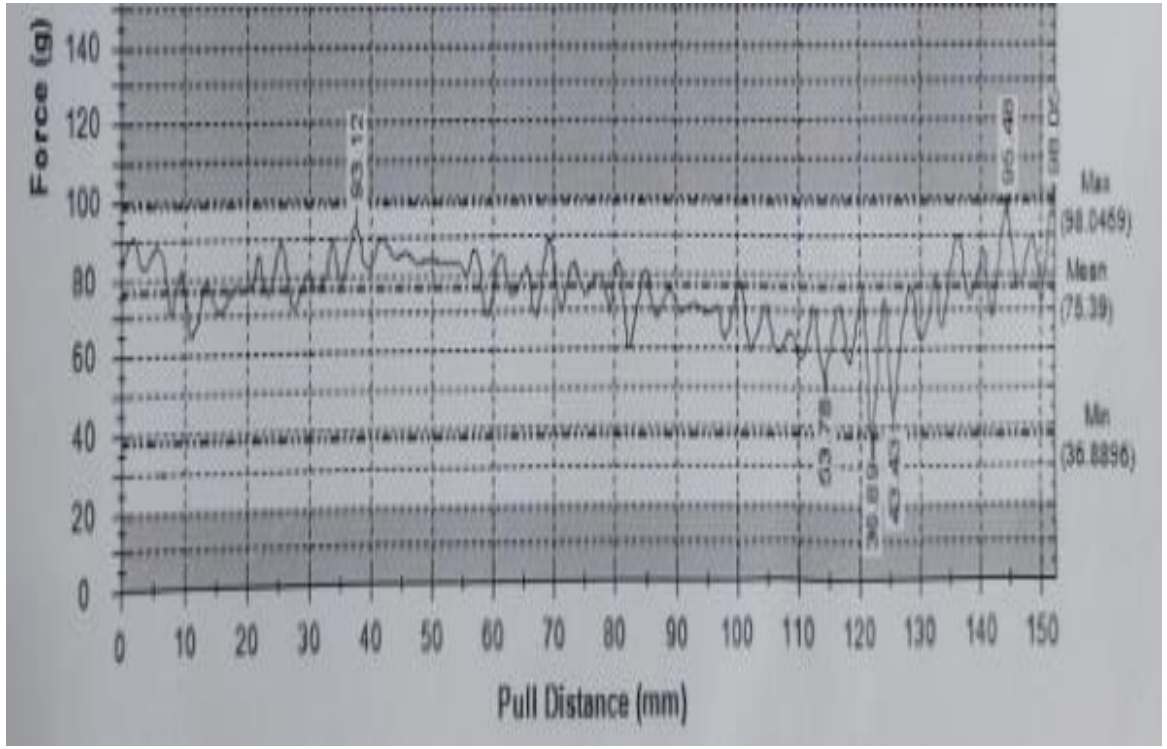
HUC0054-500-
Qualification Repor

	COMBINED SIDE	SPROCKET SIDE	EDGE SIDE
CpK	**9.219**	**8.200**	**9.048**

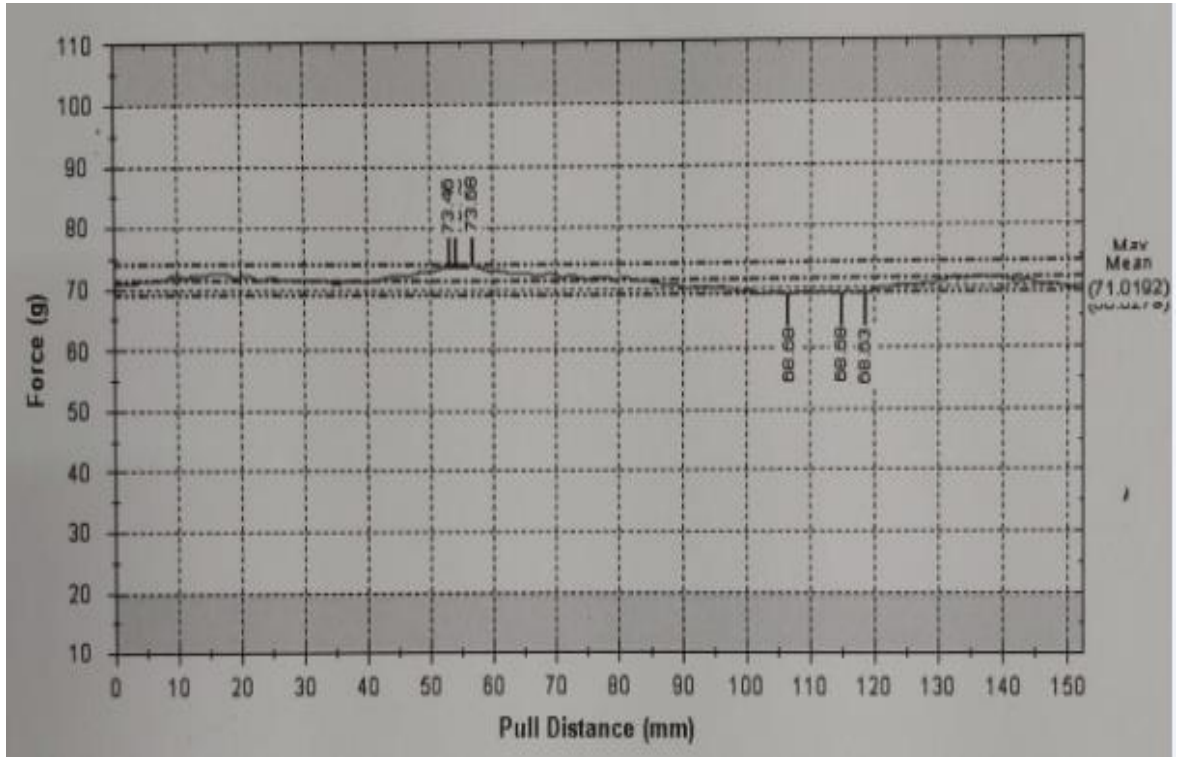
Result: Passed

Remarks: The Advantek HUC0054-500 cover tape passed Dimensional and functional test.

PST Comparison (Existing vs Proposed)



3M Cover tape &
Advantek Carrier Tape



Advantek Cover tape &
Advantek Carrier Tape

Remarks: The Advantek HUC0054-500 cover tape PST graph is more stable than 3M cover tape.

Conclusion

- New Cover tape passed dimensional and functional test.
- Based on the PST comparison Advantek cover tape is more stable/compatible in terms of PST graph.

Recommendation

Based on the qualification performed on the proposed cover tape, we recommend to change the cover tape used

FROM:

Cover Tape: **3M- 2675 W5.4 L475 ANTI-STAT**

TO:

Cover Tape: **Advantek- HUC0054-500**

Using the recommended cover tape, we can lessen/eliminate the incompatibility of the carrier tape and cover tape.

EVALUATION REPORT FOR CARRIER/COVER TAPE MATERIAL

CARRIER/COVER TAPE: SOT143-AV500.P6. P4 W8 L500 / HUC0054-500

MANUFACTURER: ADVANTEK/ ADVANTEK

SUMMARY: RESULTS

1. DIMENSIONS: n/a

2. PEEL STRENGTH TEST RESULT:

	COMBINED SIDE	SPROCKET SIDE	EDGE SIDE
CpK	**9.219**	**8.200**	**9.048**

* See attached Peel Strength Test Analysis CpK Computation

3. MACHINE PARAMETERS:

Machine: ASM-007

Sealing Temperature: 205 deg Celsius

Sealing Mode: RECIPROCATING

Seal Pressure: 3 bars

Sealing Shoe Width: 3.8mils

Sealing Dwell Time : 70 msec

Sealing Interval : 4 mm

4. PEEL TESTER :

ESA (PSA - 006)

Serial No. : 71362

RECOMMENDATIONS:

THE ABOVE MENTIONED TAPE & REEL MACHINE PASSED THE MINIMUM REQUIREMENT OF 2.00 CpK OF THE PEEL STRENGTH TEST ON THE CARRIER & COVER TAPE MATERIAL. RECOMMENDED TO USE FOR PRODUCTION RUN. CA/T ML0303-VC500.R5 TAPE AND REEL MACHINE EVALUATION RUN.

CARRIER TAPE PEEL STRENGTH TEST CAPABILITY STUDY

0

Sample#	Min. Reading	Max. Reading	Ave. Reading	RANGE
1	41.71	46.02	44.64	4.31
2	40.42	46.35	44.04	5.93
3	40.13	46.68	43.44	6.55
4	41.84	47.01	42.84	5.17
5	39.55	47.34	42.24	7.79
6	41.34	48.08	44.32	6.74
7	40.36	47.21	43.65	6.85
8	42.02	48.11	45.03	6.09
9	39.43	46.38	43.29	6.95
10	40.47	47.87	44.21	7.40
11	39.95	46.23	43.11	6.28
12	40.55	47.28	44.87	6.73
13	41.25	48.89	45.44	7.64
14	40.29	48.01	44.23	7.72
15	39.54	45.83	42.67	6.29
16	38.97	46.53	42.66	7.56
17	39.53	47.21	44.81	7.68
18	40.21	46.22	43.29	6.01
19	39.88	47.08	42.15	7.20
20	40.43	47.65	44.58	7.22
21	39.67	47.14	43.28	7.47
22	41.21	46.41	44.33	5.20
23	38.21	46.38	41.95	8.17
24	39.46	46.23	42.37	6.77
25	40.12	45.33	43.25	5.21
26	42.03	48.02	44.18	5.99
27	39.76	46.96	42.13	7.20
28	40.56	46.22	43.26	5.66
29	41.24	47.02	44.02	5.78
30	39.86	46.59	43.27	6.73
Xbar	40.33	46.94	43.59	6.61
Std. Dev.	0.924	0.809	0.959	0.937
sum	1209.99	1408.28	1307.55	
Cpk hi	19.6152197	**Cp**	**13.9078**	
Cpk lo	8.200389197	**Cpk**	**8.2004**	

SPROCKET SIDE

Machine: ASM-007
Peel Force Tester: PSA-006

SYSTEMATION PSA

Grams Force speed:	300	mm/min
Upper Limit =	100	gramsforce
Lower Limit =	20	gramsforce

T/R Machine Setting

Seal Pressure: 3 Bars
Sealing blade Temp: 205 deg C
Seal Blade Width: 0
Sealing time: 70
Venturi Pressure N/A
Tension Pressure: N/A
Machine main Pressure: 2.8 PSI

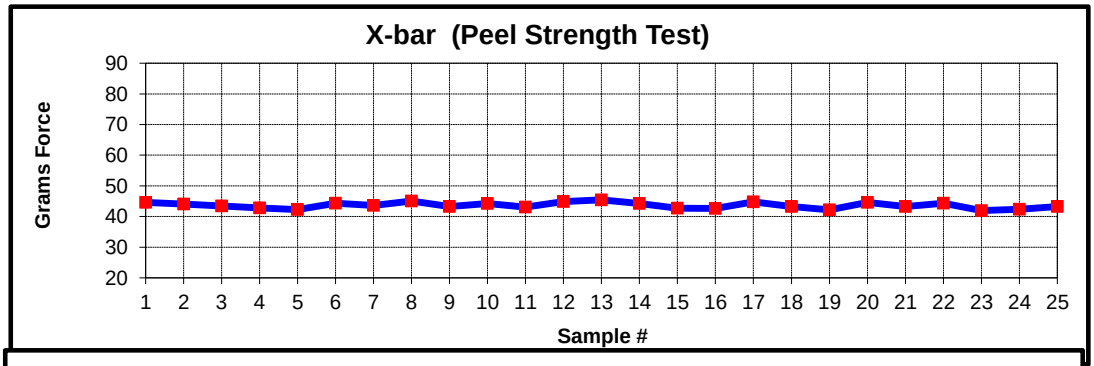
Carrier tape infromation

Vendor	0
Description	0

Cover tape infromation

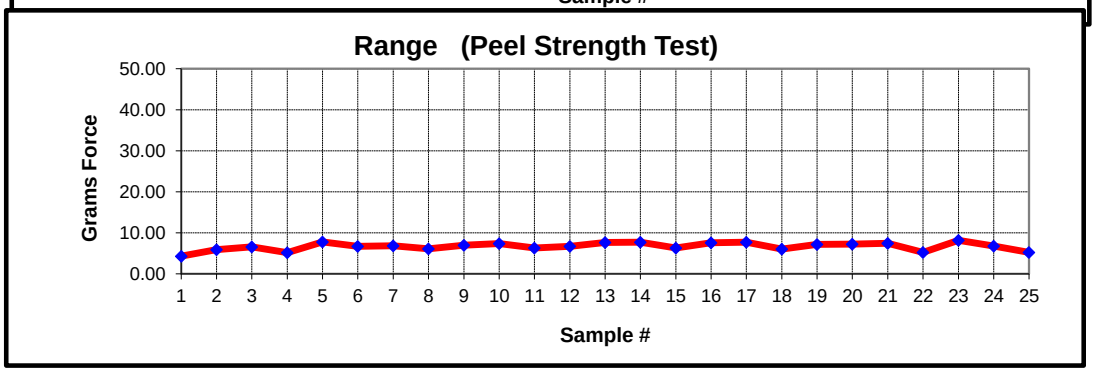
Vendor	0
Description	0.0

X-bar	
UCL	46.5
A	45.5
B	44.5
CL	43.6
C	42.6
B	41.7
LCL	40.7



Range	
UCL	9.4
A	8.5
B	7.5
CL	6.6
C	5.7
B	4.7
LCL	3.8

Note: If LCL is a negative, put ZERO, instead.



Non-sprocket Side Peel Tests

CARRIER TAPE PEEL STRENGTH TEST CAPABILITY STUDY

0

Sample#	Min. Reading	Max. Reading	Ave. Reading	RANGE
1	41.11	46.63	43.91	5.52
2	40.23	45.22	41.45	4.99
3	39.78	45.32	42.68	5.54
4	40.02	46.19	42.67	6.17
5	41.55	45.87	43.98	4.32
6	40.18	45.21	41.67	5.03
7	41.32	46.24	42.89	4.92
8	41.83	47.05	43.64	5.22
9	39.43	46.94	43.12	7.51
10	40.21	45.03	41.29	4.82
11	41.88	46.33	42.38	4.45
12	39.42	46.85	44.04	7.43
13	40.36	45.21	43.93	4.85
14	41.86	45.62	42.18	3.76
15	42.34	46.28	43.22	3.94
16	41.07	46.13	42.17	5.06
17	39.25	45.23	41.25	5.98
18	41.23	46.11	42.56	4.88
19	42.95	47.25	42.86	4.30
20	40.03	44.87	41.96	4.84
21	41.27	46.08	43.27	4.81
22	41.24	46.18	44.02	4.94
23	38.98	44.32	42.62	5.34
24	41.22	46.15	43.22	4.93
25	40.84	45.85	42.17	5.01
26	41.55	46.21	44.13	4.66
27	39.05	45.22	42.43	6.17
28	41.26	45.32	42.55	4.06
29	40.23	46.12	43.28	5.89
30	40.36	45.11	42.78	4.75
Xbar	40.74	45.87	42.81	5.14
Std. Dev.	1.006	0.710	0.840	0.871
sum	1222.05	1376.14	1284.32	
Cpk hi	22.68443378	**Cp**	**15.8662**	
Cpk lo	9.047964494	**Cpk**	**9.0480**	

EDGE SIDE

Machine: ASM-007
Peel Force Tester: PSA-006

SYSTEMATION PSA

Grams Force speed:	300	mm/min
Upper Limit =	100	gramsforce
Lower Limit =	20	gramsforce

T/R Machine Setting

Seal Pressure: 3 Bars

Sealing blade Temp: 205 deg C

Seal Blade Width: 0

Sealing time: 70

Venturi Pressure N/A

Tension Pressure: N/A

Machine main Pressure: 2.8 PSI

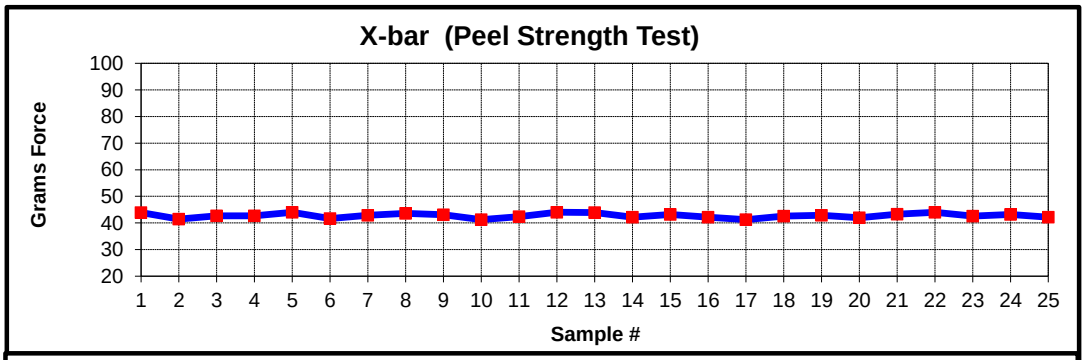
Carrier tape infromation

Vendor	0
Description	0

Cover tape infromation

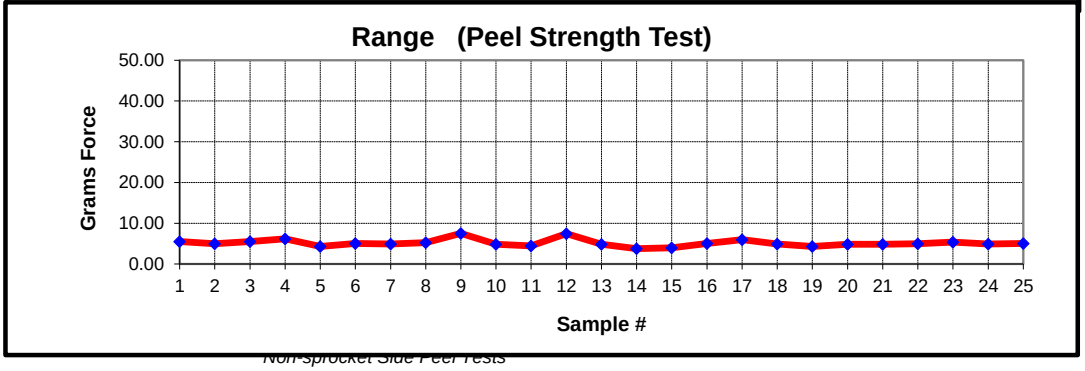
Vendor	0
Description	0.0

X-bar	
UCL	45.3
A	44.5
B	43.7
CL	42.8
C	42.0
B	41.1
LCL	40.3



Range	
UCL	7.7
A	6.9
B	6.0
CL	5.1
C	4.3
B	3.4
LCL	2.5

Note: If LCL is a negative, put ZERO, instead.



CARRIER TAPE PEEL STRENGTH TEST CAPABILITY STUDY

Sample#	Min. Reading	Max. Reading	Ave. Reading	RANGE
1	69.09	77.25	73.21	8.16
2	68.63	73.68	71.02	5.05
3	68.89	75.39	71.96	6.50
4	72.68	77.91	75.08	5.23
5	69.81	76.34	74.67	6.53
6	69.06	75.64	72.89	6.58
7	71.02	76.32	72.07	5.30
8	68.78	74.21	71.24	5.43
9	70.97	76.83	72.36	5.86
10	72.08	78.01	73.56	5.93
11	69.05	75.47	72.01	6.42
12	68.22	74.39	71.78	6.17
13	71.25	77.18	73.25	5.93
14	70.32	76.92	72.85	6.60
15	68.15	73.95	71.18	5.80
16	70.87	76.58	72.02	5.71
17	68.06	74.87	70.92	6.81
18	69.58	75.44	71.89	5.86
19	70.78	76.83	72.04	6.05
20	71.09	77.29	72.76	6.20
21	69.08	74.72	71.08	5.64
22	70.63	76.86	72.11	6.23
23	70.96	77.35	72.85	6.39
24	71.05	77.89	73.28	6.84
25	69.87	75.68	72.23	5.81
26	68.36	74.39	71.74	6.03
27	71.78	77.54	73.43	5.76
28	70.07	76.29	72.98	6.22
29	68.63	73.96	71.93	5.33
30	69.94	77.68	72.55	7.74
Xbar	69.96	76.10	72.43	6.14
Std. Dev.	1.266	1.345	0.997	0.679
sum	2098.75	2282.86	2172.94	
Cpk hi	9.219112574	**Cp**	**13.3762**	
Cpk lo	17.53332398	**Cpk**	**9.2191**	

COMBINE

Machine: ASM-007
Peel Force Tester: PSA-006

SYSTEMATION PSA

Grams Force speed: 300 mm/min
Upper Limit = 100 gramsforce
Lower Limit = 20 gramsforce

T/R Machine Setting

Seal Pressure: 3 Bars

Sealing blade Temp: 205 deg C

Seal Blade Width: 0

Sealing time: 70

Venturi Pressure N/A

Tension Pressure: N/A

Machine main Pressure: 2.8 PSI

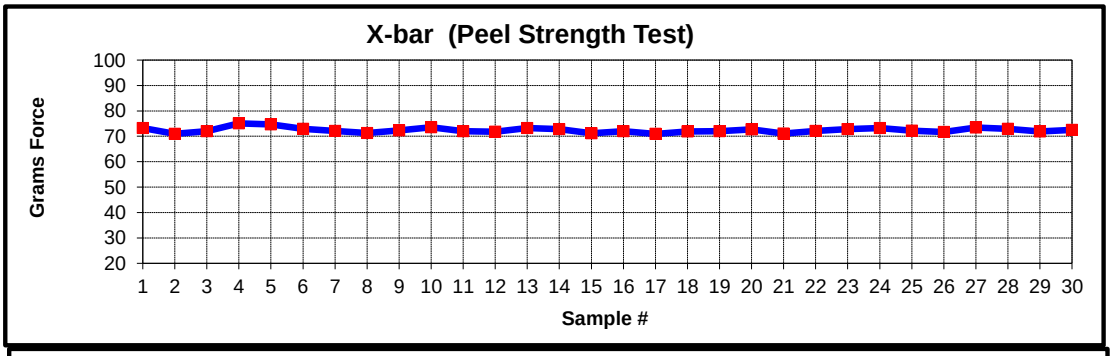
Carrier tape infromation

Vendor	
Description	

Cover tape infromation

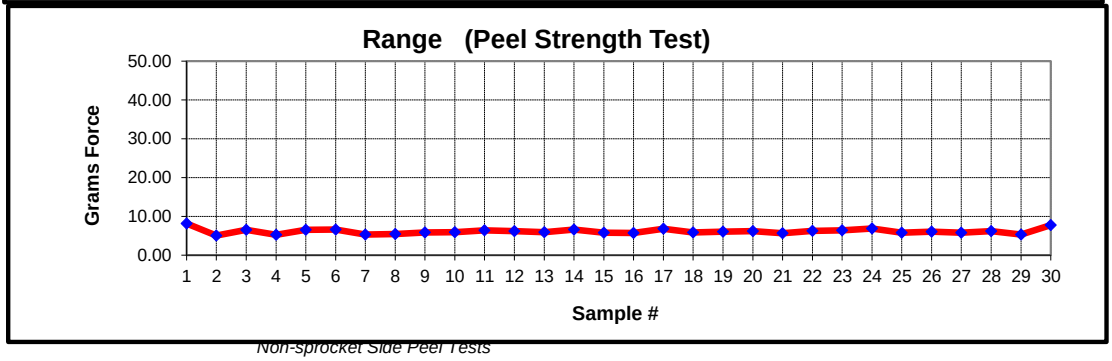
Vendor	
Description	

X-bar	
UCL	75.4
A	74.4
B	73.4
CL	72.4
C	71.4
B	70.4
LCL	69.4



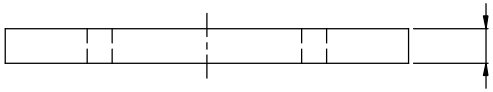
Range	
UCL	8.2
A	7.5
B	6.8
CL	6.1
C	5.5
B	4.8
LCL	4.1

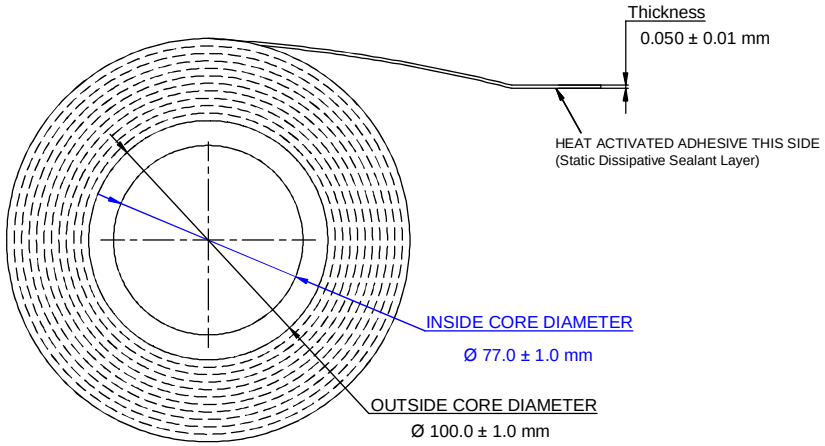
Note: If LCL is a negative, put ZERO, instead.



Non-sprocket Side Peel Tests

REVISIONS			
REV.	DESCRIPTION	DATE	INT
0	Original for pre- launch request (CO 12-0131)	10/23/2012	NSU
1	Add additional width type for 13.1mm, 21.0mm and 21.5mm per reqeustor; Remove overall (roll) diameter info. per requestor since not required as the tape thickness is already controlled (The reqeustor info. refer to CO 16-0024)	06/29/2016	NSU





Part Number	Width (mm)	Length (M)
HUC0053(-yyy/-yyyy)	5.3	200, 300, 500, 750 and 1,000 ...etc.
HUC0054(-yyy/-yyyy)	5.4	
HUC0055(-yyy/-yyyy)	5.5	
HUC0092(-yyy/-yyyy)	9.2	
HUC0093(-yyy/-yyyy)	9.3	
HUC0095(-yyy/-yyyy)	9.5	
HUC0131(-yyy/-yyyy)	13.1	
HUC0133(-yyy/-yyyy)	13.3	
HUC0135(-yyy/-yyyy)	13.5	
HUC0210(-yyy/-yyyy)	21.0	
HUC0213(-yyy/-yyyy)	21.3	
HUC0215(-yyy/-yyyy)	21.5	
HUC0255(-yyy/-yyyy)	25.5	
HUC0375(-yyy/-yyyy)	37.5	
HUC0495(-yyy/-yyyy)	49.5	

PART NO.	WIDTH "W"
HUCxxxx-yyy or HUCxxxx-yyyy -yyy=Length (i.e. -300=300 M; -1000=1000 M)	xxxx=width type (i.e. 0092=9.20 mm, 1135=113.5 mm)

NOTE:
1. ADV P/N: HUCxxxx-yyy or HUCxxxx-yyyy
2. Width tolerance ± 0.10 mm
3. Length (M): -yyy +2 /-0 M or -yyyy +2/-0 M,where yyy or yyyy=Length
4. Please refer to Tech Bulletins for related properties
5. Core width dimension refer to below table

Cover Tape Width (mm)	Core Width Spec.(mm) (Plastic)	
5.3	5.3	± 0.1
5.4	5.4	± 0.1
5.5	5.5	± 0.1
9.2	9.2	± 0.1
9.3	9.3	± 0.1
9.5	9.5	± 0.1
13.1	13.1	± 0.1
13.3	13.3	± 0.1
13.5	13.5	± 0.1

Cover Tape Width (mm)	Core Width Spec.(mm) (Plastic)	
21.0	21.0	± 0.1
21.3	21.3	± 0.1
21.5	21.5	± 0.1
25.5	25.5	± 0.1
37.5	37.5	± 0.1
49.5	49.5	± 0.1

CAD GENERATED DRAWING,
DO NOT MANUALLY UPDATE
DO NOT SCALE DRAWING

ADVANTEK engineered confidence

TITLE: TYPE "HUC" Heat Activated Antistatic Cover Tape (For customer)

Designed by:
Checked by:
Approved by: LINGER LIU
Date Approved:

TOLERANCES UNLESS - SPECIFIED
1 PL ± 0.2 2 PL ± 0.10
DIA./ RAD. ± .003

MATERIAL: SEE Tech bulletins
FINISH: N/A
DRAWN: NSU
SCALE: None
SHEET 1 OF 1
SIZE: B
DATE: 06/29/2016
DWG NO.: C109988BP
REV: 1

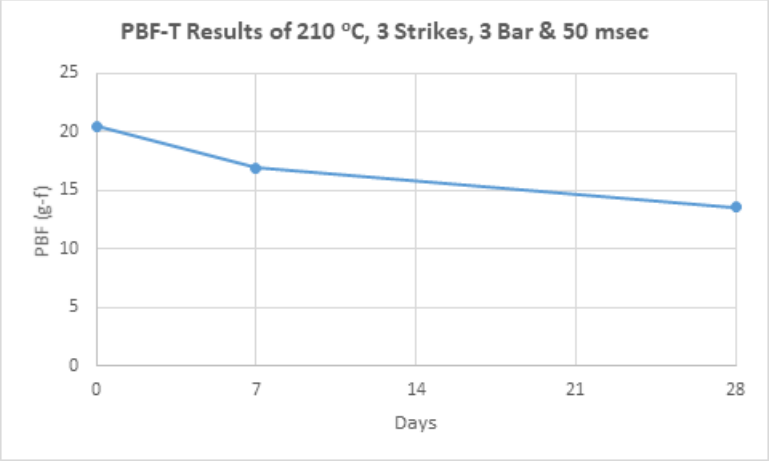
Materials Science Laboratory	AAEC
Confidential	**Job Number: 000001**

Report of Analysis

Date: 7/29/2021
Name of Materials: C-Material
Manufacturer: ADV-PH
Test Requested: Seal PBF-T under ambient condition
Test Requested by: Raymund Escalante
Objective: Confirm the compatibility of HUC cover-tape with the C-Material
Results:

HUC0054 on C-Material (IP4035-DC) Aging Data using Different Conditions for PBF-T: 3 Bar, 50msec			
Ambient @ 25º C/ 50 %RH		PBF in g-f	
Temp (Cº)	Days	Mean	SD
210 (3 Strikes)	0	20.48	5.94
	7	16.94	7.96
	28	13.57	8.58
210 (6 Strikes)	0	33.80	4.43
	7	34.76	4.33
	28	35.71	4.06
220 (3 Strikes)	0	22.56	5.94
	7	26.17	5.92
	28	26.27	6.66
220 (3 Strikes)	0	34.41	3.59
	7	35.76	3.37
	28	39.99	4.53

A.



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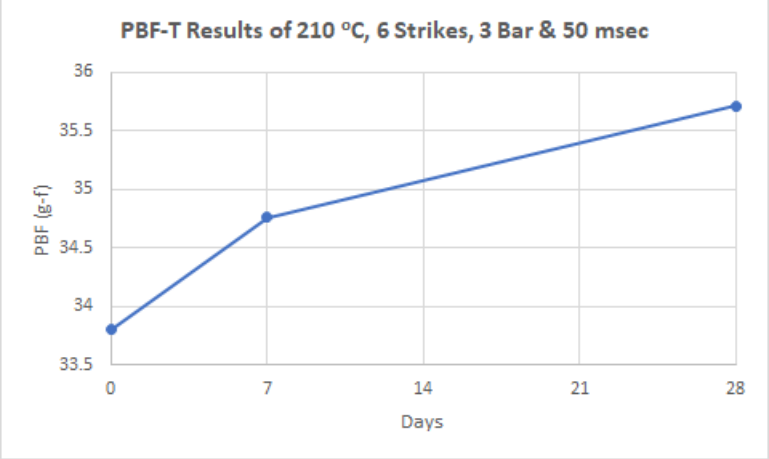

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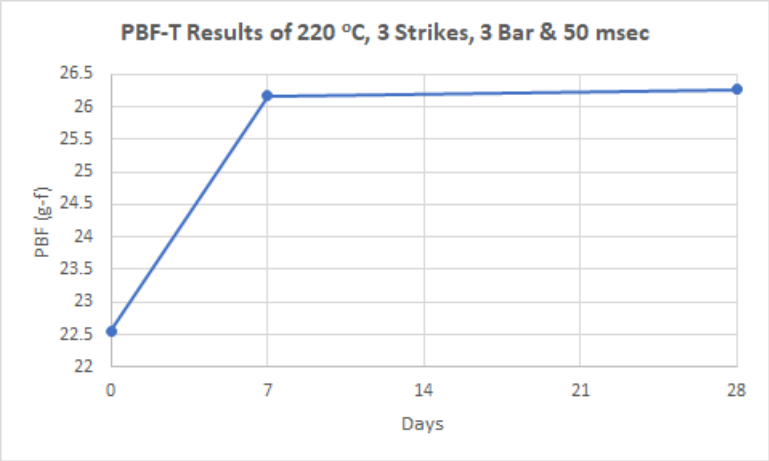

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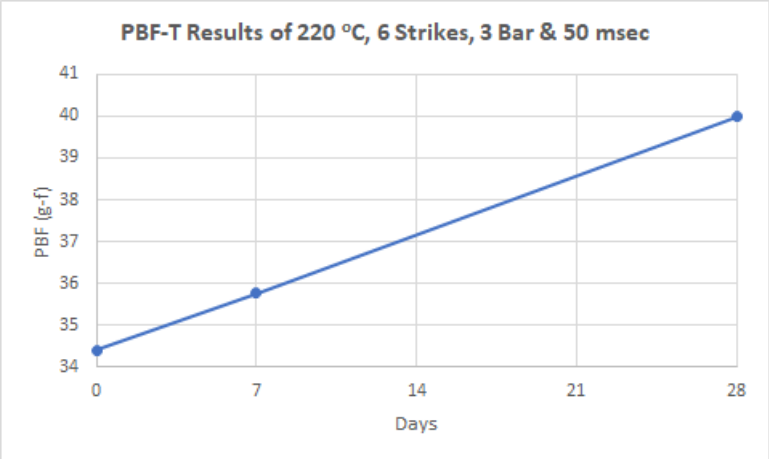


Remarks:

The PBF-T results show compatibility between HUC, and C-material based on the sample inspection for open seal; There were no open seal observed between day zero (0), day seven (7) and day twenty-eight (28) seal test. A drop in PBF response for 210 ºC with three (3) strikes was observed. This is an indication that the cover tape's adhesive was not fully activated/bonded with the surface of the carrier tape. All samples that were sealed under the six (6) strikes condition produced an acceptable PBF response under the EIA standard.

It is recommended to use a sealing condition between 210 ºC -230 ºC as a sealing temperature with six (6) strikes to fully activate the adhesive component of the HUC cover-tape for C-Material.

***** Nothing Follow*****

Materials Science Laboratory	AAEC
Confidential	**Job Number: 000001**

Tests Performed by:	**Chris Russel**	

Disclaimer: *The information contained herein is considered typical laboratory data and is compiled using good faith techniques. Advantek makes no representations or warranty expressed or implied. Advantek assumes no obligation or liability of its accurateness and the potential user should perform any pertinent testing to determine suitability of the product. This information is subject to change without notice*

Technology Made For You™

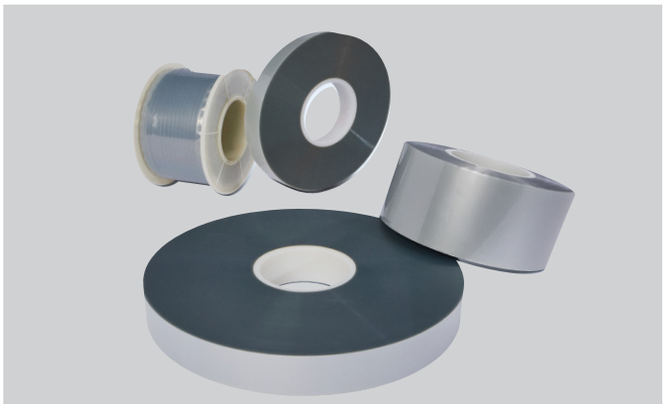
ADVANTEK

COVER TAPES

Type HUC Antistatic Heat Activated Cover Tape

Advantek's Type HUC Cover tape is an antistatic, transparent, heat sealable cover tape. it's engineered to protect and contain surface mount components in embossed polystyrene and polycarbonate carrier tapes.

- Transparent to allow post-taping inspection of components in the pocket
- Formulated to minimize wetting
- Suitable for any heat taping application
- Consistent adhesion
- Complies with EIA-481 standards
- Proven to perform with Advantek Carrier Tape materials of Polystyrene and Polycarbonate
- Length up to 1000m in S/W, 3000m in L/W for narrow widths
- Halogen-Free



Material Properties

Property	Typical Value	Test Method
Thickness	0.050 mm	N/A
Adhesion to Carrier Tape1	45±15 grams	EIA-481
Surface Resistivity	adhesive side: ≥1.0E5, <1.0E10 Ohms/sq.; Base-film side: ≥1.0E5, <1.0E11Ohms/sq.	ASTM D-257, ANSI/ESD STM11.13
Tensile Strength	11,000 PSI	ASTM D-882
Elongation	95%	ASTM D-882
Transparency	Transmittance: 90%; Haze: 22%; Clarity: 89%	ASTM D-1003
Color	Transparent	

Note: The values presented for this product are typical laboratory data and may be changed without notice. 1Tests performed under specific sealing conditions.

Construction

Type HUC cover tape contains a top layer of antistatic polyester base film, and a bottom layer of heat activated adhesive coating layer. Both sides are antistatic to ensure the protection of static sensitive devices.

Configurations

Type HUC heat activated cover tape is provided width standard width 300, 500 and 1000 splice-free meters on a 3" inner diameter plastic core. Longer meter length in level winding is available in 3000 meters for both 8 and 12mm applications. Widths available include all EIA standard widths for carrier tapes between 8mm and 120mm, plus custom widths by special request.

Shelf Life and Storage

We recommend that the Advantek HUC cover tape be used within 24 months from the date of manufacture. Store this product in its original packaging in a climate-controlled environment with temperatures under 30°C and relative humidity below 65%. Do not store in direct sunlight or excess temperature/humidity for prolonged periods of time. Allow the product to stabilize at room temperature for 48 hours prior to use.

Reference Sealing Condition

Parameter	Range
Temperature	150 - 200°C
Dwell Time	0.02 - 0.40 sec.
Pressure	30 - 70 PSI
Seal Rail width	0.015 - 0.020“ (0.38 - 0.51mm)

Ordering Information

Part number	Width (mm)	Length (m)
HUC0054-300	5.4±0.1	300
HUC0054-3000	5.4±0.1	3000
HUC0092-300	9.2±0.1	300
HUC0092-500	9.2±0.1	500
HUC0092-3000	9.2±0.1	3000
HUC0133-300	13.3±0.1	300
HUC0133-500	13.3±0.1	500
HUC0213-300	21.3±0.1	300
HUC0255-300	25.5±0.1	300
HUC0255-500	25.5±0.1	500
HUC0375-300	37.5±0.1	300
HUC0375-500	37.5±0.1	500
HUC0495-500	49.5±0.1	500

Note: Advantek sales may advise you for the availability of other widths & lengths.

