

High Speed Unwind

HSU-2000

Accurately measure the unwind force of a roll of tape with the ChemInstruments High Speed Unwind Machine. The High Speed Unwind Machine meets the standards specified in ASTM D 1000 and AFERA 4008 for unwind force at a fast rate of removal. It will also test the unwind force of pressure sensitive tapes according to Test Methods PSTC-8 and PSTC-13.

- Rugged construction, capable of withstanding the abuse of the production environment
- Digital speed control ensures a constant speed regardless of wind-up roll diameter
- Selectable speed range from 10 to 400 fpm (3 – 120 mpm)
- Accepts rolls up to 3" wide (75mm) x 12" OD (300mm) on standard 3" cores (75mm)
- Length counter incorporated into controller to record in either inches, feet, centimeters, or meters

- 25 pound load cell is included with the machine
- Operating temperature range 32° – 150° F (0° - 70° C)
- Capable of stand-alone operation with integrated LCD 5.7 inch touch screen display
- Data can be downloaded to EZ-Data software for complete data management
- Accurate to $\pm 0.1\%$ of load cell range
- Capable of pulling up to 10 pounds (4.5 Kg) (not duct tape)
- Universal Input Voltage – 85-265 VAC (50/60hz)
- Additional load cell capacities available: 5 and 10 pounds



EZ Data compatible



Data Acquisition System

The ChemInstruments electronic data acquisition system is a state-of-the-art microprocessor controlled force measurement package that combines accuracy with ease of use. This system simultaneously controls test motion, reads the force of a test from a load cell, stores that data in its memory and interfaces with EZ-Data data management software to show the results graphically.

- Records 400 data points per second during a test interval
- Displays the average, high and low measured force results immediately upon completion of a test
- Export data by USB connection to a local PC with our EZ-Data software
- Displays test values in grams, kilograms, ounces, pounds or Newtons

EZ-Data System Software

EZ-Data Management software interfaces with all of ChemInstruments' load cell based testing platforms. The software is a very simple and intuitive way to get more out of your testing equipment. EZ-Data Management software provides test data results in report-ready format. This easy to use software provides powerful statistical analysis and reporting capabilities on any Microsoft Windows based personal computer.

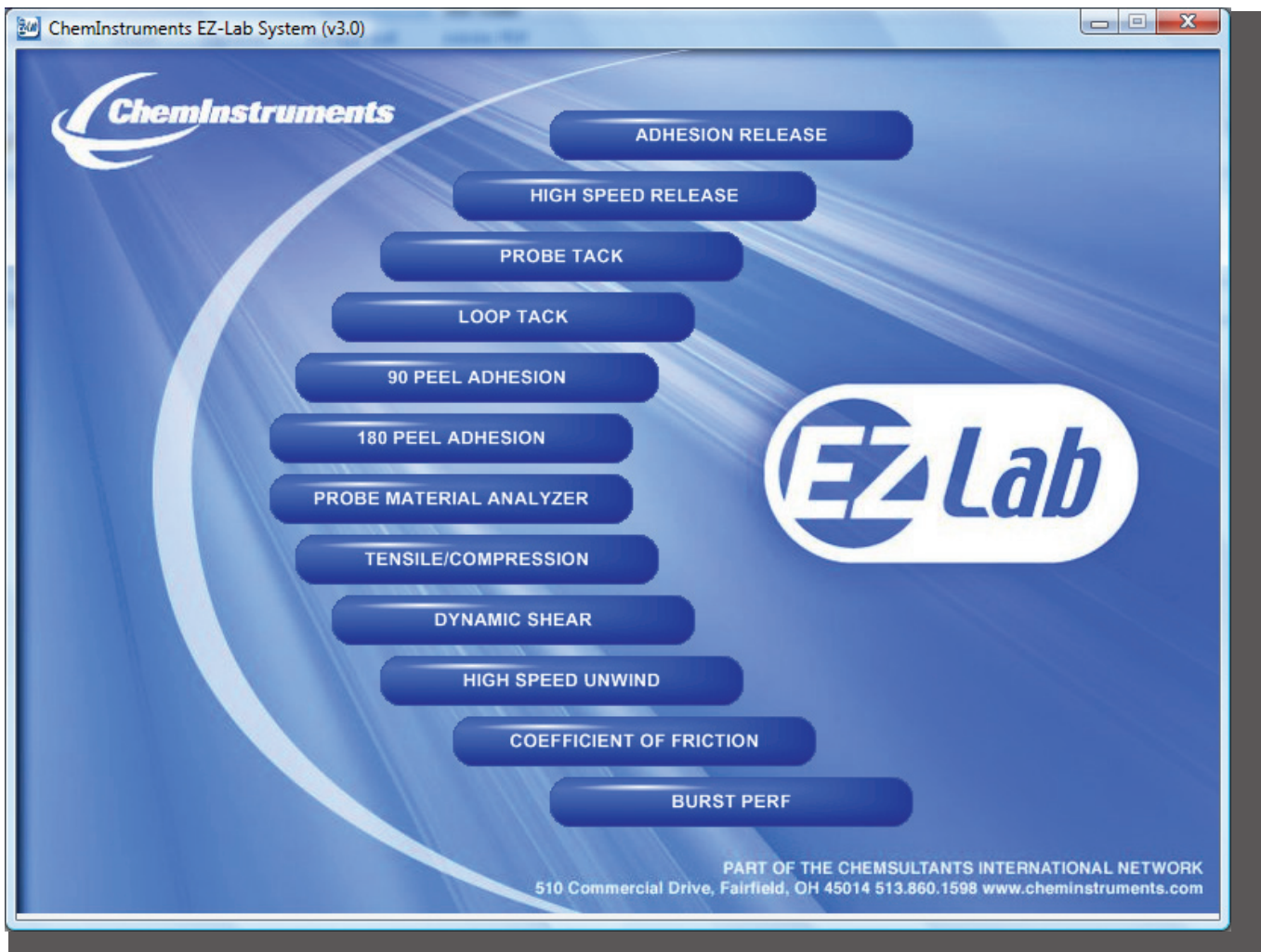
EZ-Data Software Features

- One main screen contains all commands to easily setup and operate each machine
- Test data is automatically graphed upon test completion
- Pertinent data points are highlighted on the graph page for easy reference
- Files are automatically saved in the root directory for security purposes
- Files may also be saved anywhere on a local network

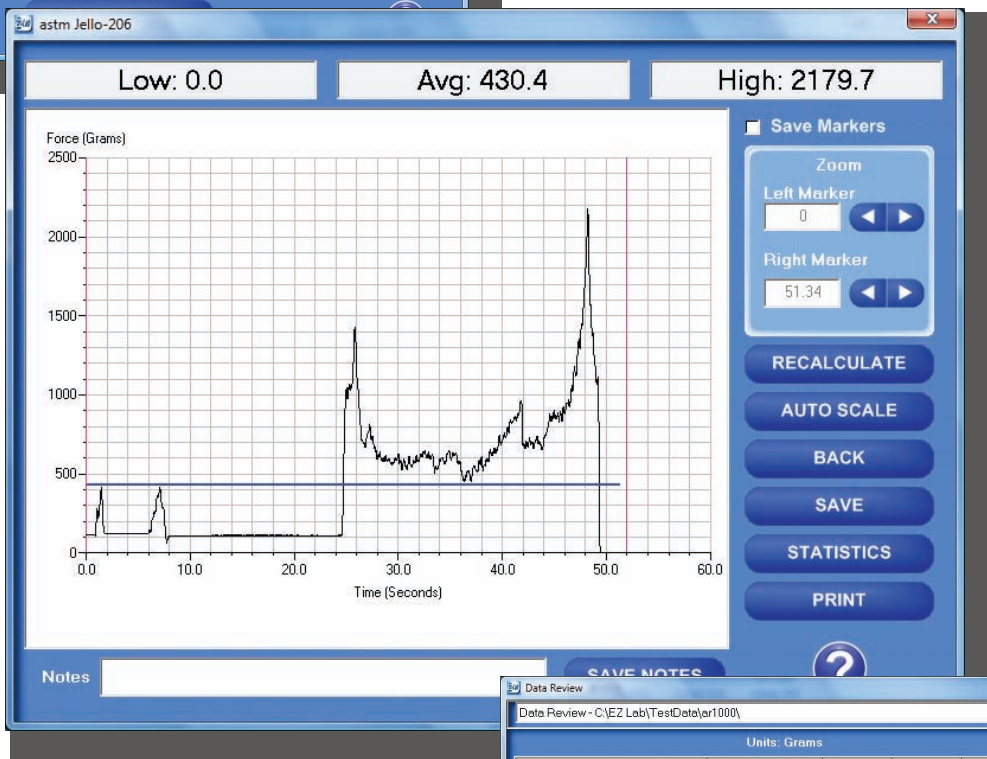
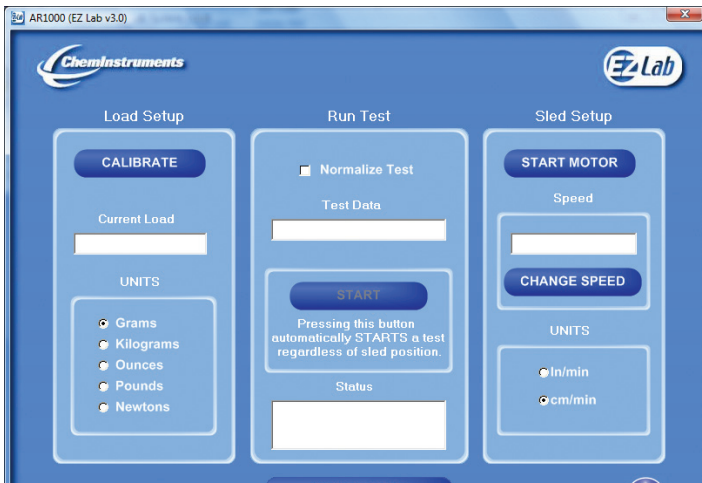
- Test data files are transferable across networks and the Internet
- Test results can be shared in Adobe .PDF file format.
- Up to 5 graphs can be overlaid for comparison purposes
- Up to 99 tests can be tabulated for statistical analysis
- Convert EZ-Data files into Microsoft Excel files with one click
- Graph cropping feature provides more detailed analysis and selected views
- Previous tests are always available for review

EZ-Data Management software can be used with the following test equipment:

Adhesion / Release, Tensile / Compression, Probe Tack, Loop Tack, High Speed Release, 90° Peel Adhesion, 180° Peel Adhesion, Coefficient of Friction, High Speed Unwind, Burst / Perforation, Probe Material Analyzer.



EZ-Data Management software provides a complete testing and reporting platform for R&D, QC, and shop floor testing and data management. Combined with any of our pieces of testing equipment, this software is a very powerful addition to any lab that requires advanced data management and reporting for traceability or ISO purposes.



File Name	Date	Low	Avg	High
k-001-RevA	01/06/09 03:27 PM	0.2	0.5	0.7
k-001	01/06/09 03:27 PM	0.2	0.5	0.7
k	01/02/09 02:39 PM	0.0	333.5	926.6
edgetech-003-RevA	12/15/08 03:40 PM	271.3	398.2	1118.5
yy-012	12/15/08 03:24 PM	497.1	499.6	501.1
yy-011	12/15/08 03:24 PM	497.4	499.7	501.5
yy-010-RevA	12/15/08 03:22 PM	497.2	499.5	502.0
yy-010	12/15/08 03:22 PM	497.2	499.6	502.0
yy-009-RevA	12/15/08 02:21 PM	498.7	500.0	501.3
yy-009	12/15/08 02:21 PM	496.4	500.0	505.2
yy-007-RevA	12/15/08 02:18 PM	497.2	500.1	502.6
yy-007	12/15/08 02:18 PM	489.4	500.1	511.8
yy-006-RevA	12/15/08 02:16 PM	498.2	500.0	501.1
yy-006	12/15/08 02:16 PM	498.2	500.0	501.1
yy-005-RevA	12/15/08 02:16 PM	498.0	500.0	502.5
yy-005	12/15/08 02:16 PM	497.7	500.0	502.5

System Requirements

- Personal Computer operating Microsoft Windows 2000 or newer
- 4 MB of RAM
- Pentium processor, 200 MHz or higher
- RS-232 COM port or USB with converter to RS-232
- 3MB of hard drive space

Accessories

Water Vapor Cup

The sturdy cast aluminum WV-100 Water Vapor Cup is used in the test methods PSTC-34 and ASTM D 3833 water vapor transmission and PSTC-35 and ASTM D 3816 water penetration tests.



Double Sided Tape

A versatile 2 sided tape used in conducting release and coefficient of friction testing.



Calibration Weight

TW-CAL Calibration Weight Set: Brass calibration weight set with hooks. This set includes a selection of weights from 10-1000 grams that are traceable to NIST standards. An optional certificate is offered.



Adhesive Remover

A unique water-soluble solvent-based cleaner of exceptional dissolving power. It offers relatively high safety, and reduces cleanup labor.



Swing Arm Sample Die Cutter

DC-500

The Swing Arm Sample Die Cutter is ideal for producing samples from paper, film, foil, label, tape and a wide variety of other materials. The Die Cutter employs a safe, manually operated, cam actuated cutting stroke to produce samples with standard Steel Rule and Clicker dies. It is simple to use and eliminates the risk of injury associated with hammering hand held dies when making samples.

- Rugged construction, capable of withstanding the abuse of the production environment
- Quick and easy to operate and maintain
- Upper platen dimensions of 8" x 8" (20 cm x 20 cm)
- Lower platen dimensions of 9" x 11" (23 cm x 28 cm)
- Long-life and replaceable lower platen cutting pad made of nylon
- Easy adjustment for stroke and height changes

- Upper platen and leverage arm swing away for easy access during setup
- Mounts to work table for hazard free operation
- Dies available on request, but not included with the unit
- Single cavity Clicker dies available in standard and custom shapes
- Multiple cavity Clicker dies available in custom shapes
- Various tolerance dies available from $\pm 0.005"$ (0.127 mm) to $\pm 0.015"$ (0.381 mm)



Sample Cutters

SC-100
SCF-100

These specimen tape cutters simplify cutting samples for ASTM, FINAT, PSTC Appendage B, 2.4, AFERA and TLMI procedures. Extra blades and custom sample cutters are available. Contact ChemInstruments for more information about custom design specimen tape cutters.

Specimen Tape Cutters

- 1" Specimen tape cutter
- 1/2" Specimen tape cutter
- 24 mm Specimen tape cutter
- 12 mm Specimen tape cutter

Shear Cutoff Fixture

- Quickly and accurately cut a shear sample to a 1" x 1" (2.5 cm x 2.5 cm) contact area
- Meets the requirements of ASTM, FINAT, PSTC, AFERA and TLMI standards
- 1/2" x 1/2" (1 cm x 1 cm) fixture is also available upon request



Hand Rollers

HR-100
HR-102

4.5 pound Hand Roller & 10 pound Hand Roller

- 4.5 pound (2045g) roller features a steel core with a shore scale A 80 durometer silicone rubber cover
 - Diameter of 3.75" (95 mm) and a width of 1.75" (45 mm)
- 10 lb (4540 g) roller features a solid steel core with an 8 RMS polished surface
 - Diameter of 5.00" (127 mm) and a width of 1.75" (45 mm)
- Legs on handle extend beyond the circumference of the roller to protect roller surface
- Slots on handle allow roller axles to "float" only the weight of the roller during operation
- Meets the requirements of PSTC Appendage B, 2.8 and other industry standards

FINAT Hand Roller

- 2 Kg (4.4 pound) roller features a steel core with a shore scale A 80 durometer silicone rubber cover
- Diameter of 85 mm (3.34") and a width of 50 mm (1.97")
- Legs on handle extend beyond the circumference of the roller to protect roller surface
- Slots on handle allow roller axles to "float" only the weight of the roller during operation
- Meets the requirements of FINAT standard 2.1



Custom design rollers made to nearly any customer specification



Test Panels

The 304 stainless steel meets the requirements set forth in ASTM A666. The panels comply with PSTC Appendage B 2.6. The 18 gauge panels have the Bright Annealed finish and are cut to size for use in various test methods.

All Stainless steel panels are 0.047" (1.2mm) thick.

Standard sizes include:

Loop Tack

TP-16 (1"x6") (2.5cm x 15cm)

TP-13 (1"x3") (2.5cm x 7.5cm)

Shear

TP-23 (2"x3") (5cm x 7.5cm)

Adhesion

TP-25 (2"x5") (5cm x 13cm)

TP-26 (2"x6") (5cm x 15cm)

TP-28 (2"x8") (5cm x 20cm)

TP-39 (3"x9") (7.5cm x 23cm)

Specialized Panels*

Glass: 1/8" (0.3cm) thick

Plastics: 1/8" (0.3cm) thick

High Density Polyethylene (HDPE)

Low Density Polyethylene (LDPE), 1/4" (0.5cm) thick

Co-Polyester (PETG)

Polypropylene (PP)

Polycarbonate(PC)

Polyvinylchloride (PVC)

Polystyrene(PS)

ABS Plastic

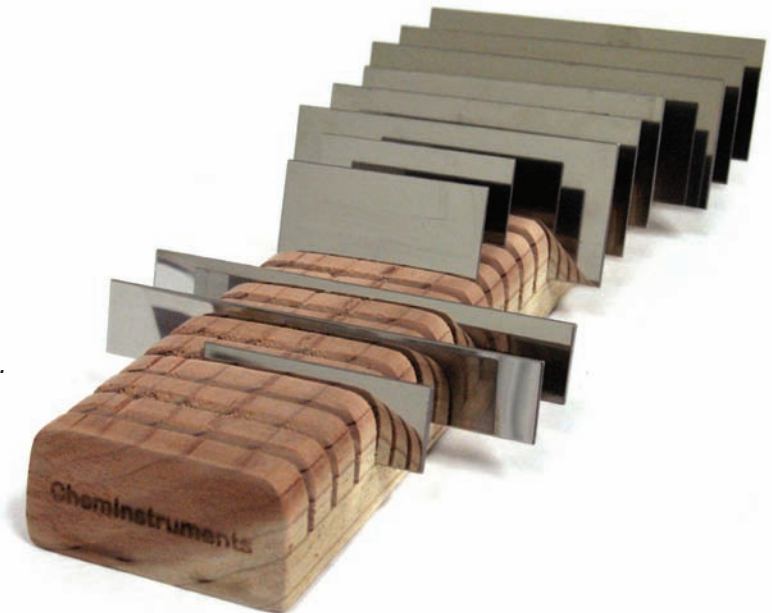
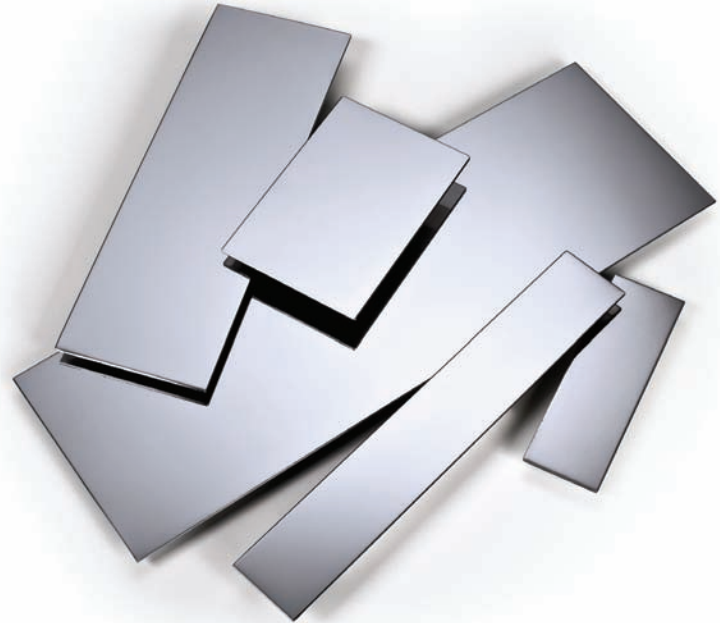
Acrylic

Aluminum: 1/16" (0.15cm) thick

AFERA Stainless Steel Panels

**Specialized Panels do not meet ASTM D 3330 Specs.*

Standard panel sizes as well as custom dimensions are available in the above materials.



Test Panel Holder – Wooden holder with 22 angled slots to hold panels between tests. Dimensions: 16" (41cm) long x 3.5" (9cm) wide.

Custom Design Services

Let ChemInstruments work with your team to develop a complete testing platform for your unique needs. We can build a simple fixture to help secure your specific sample in the proper orientation or we can design an entire product system for your worldwide manufacturing needs. You can count on our experience to build you a highly functional and precise platform at a reasonable cost and all in a timely manner. We have been helping our customers think outside the box for decades. The next time you have a difficult process to test and can't figure how to get out of the box, think of us. We'll help get you a custom designed and built device that will exceed your expectations.

Areas of expertise:

- Test fixtures
- Modifications to our standard products
- Coating machines
- Laminating machines
- Sample preparation devices
- Material testing designs
- Custom software development associated with our equipment
- Custom developed circuit boards associated with our equipment

Installation Qualification/ Operation Qualification (IQ/OQ)

ChemInstruments is proud to offer equipment validation services for our full line of testing equipment including IQ/OQ. This on-site service includes documentation of the

IQ/OQ procedure, certificate of conformance, and certificates for all tools used in the validation.

A2LA Calibration Services

ChemInstruments in partner with Chemsultants International is proud to offer A2LA certified calibration services. This on-site service provides certified calibration / verification to the ASTM E4 standard. Calibration / verification service includes a full test report including as found, as left, and standard in tolerance determination.

A2LA calibration services are available on the following equipment:

- AR-2000
- PA-1000-90
- PA-1000-180
- LT-1000
- TT-1100
- HSR-2000

Equipment Specifications

Model number	Height	Width	Depth	Weight
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Adhesion/Release

AR-2000	24" (61 cm)	36" (91 cm)	13" (33 cm)	92 lbs (42 Kg)
PA-1000-180	8" (20 cm)	23" (58 cm)	12" (30 cm)	29 lbs (13 Kg)
PA-1000-90	25" (63 cm)	18" (46 cm)	10" (25 cm)	45 lbs (20 Kg)
HSR-2000	14" (35 cm)	21" (53 cm)	11" (28 cm)	30 lbs (14 Kg)

Tack

LT-1000	16" (40 cm)	12" (30 cm)	15" (38 cm)	37 lbs (17 Kg)
PT-1000	16" (40cm)	12" (30 cm)	15" (38 cm)	37 lbs (17 Kg)
RBT-100	2.5" (6.5 cm)	9" (23 cm)	2.5" (6.5 cm)	1 lb (0.5 Kg)

Material Analysis

TT-1100	48" (122 cm)	13" (33 cm)	16" (41 cm)	54 lbs (25 Kg)
PMA-1000	22" (56 cm)	14" (36 cm)	18" (46 cm)	55 lbs (25 Kg)
CAM-Plus (main body)	15" (38 cm)	8" (20 cm)	18" (45 cm)	28 lbs (12.7 Kg)
CAM-Plus (light source)	5" (12.7 cm)	7" (18 cm)	8" (20 cm)	12 lbs (5.4 Kg)
BP-1000	11" (28 cm)	14" (36 cm)	18" (46 cm)	29 lbs (13 Kg)
COF-1000	8" (20 cm)	23" (58 cm)	12" (30 cm)	29 lbs (13 Kg)
MI-1000	12" (30 cm)	8" (20 cm)	10" (25 cm)	17 lbs (8 Kg)
HSU-2000	15" (38 cm)	25" (63 cm)	18" (45 cm)	59 lbs (26 Kg)
SR-500	13" (33 cm)	11" (28 cm)	8" (20 cm)	45 lbs (20 Kg)

Coaters & Laminators

EC-100	7" (18 cm)	12" (30 cm)	22" (56 cm)	18 lbs (8 Kg)
EC-200	7" (18 cm)	15" (38 cm)	22" (56 cm)	30 lbs (13 Kg)
LC-100	18" (46 cm)	19" (48 cm)	22" (56 cm)	55 lbs (25 Kg)
HLC-101 (coating head)	18" (46 cm)	16" (41 cm)	18" (46 cm)	42 lbs (19 Kg)
HLC-101 (control box)	9" (23 cm)	16" (41 cm)	9" (23 cm)	17 lbs (8 Kg)
HLCL-1000	22" (56 cm)	33" (84 cm)	37" (94 cm)	160 lbs (73 Kg)
LL-100	18" (46 cm)	37" (94 cm)	11" (28 cm)	64 lbs (29 Kg)
HL-100	30" (76 cm)	39" (99 cm)	14" (36 cm)	185 lbs (84 Kg)

Model number	Height	Width	Depth	Weight
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Shear

DS-1000	9" (23 cm)	14" (36 cm)	18" (46 cm)	29 lbs (13 Kg)
S-RT-10	18" (46 cm)	39" (99 cm)	7" (18 cm)	43 lbs (19 Kg)
S-RT-30	31" (79 cm)	38" (96 cm)	18" (46 cm)	150 lbs (68 Kg)
S-HT-8 (oven unit)	16" (41 cm)	16" (41 cm)	9" (23 cm)	28 lbs (13 Kg)
S-HT-8 (timer box)	9" (23 cm)	16" (41 cm)	11" (28 cm)	14 lbs (6 Kg)
S-O-8 (exterior)	34" (87 cm)	28" (71 cm)	25" (65 cm)	143 lbs (65 Kg)
S-O-8 (interior)	19" (48 cm)	23" (58 cm)	19" (48 cm)	NA
S-OSI-8 (exterior)	34" (87 cm)	28" (71 cm)	25" (65 cm)	143 lbs (65 Kg)
S-OSI-8 (interior)	19" (48 cm)	23" (58 cm)	19" (48 cm)	NA
S-OSI-8 (oven unit)	16" (41 cm)	16" (41 cm)	9" (23 cm)	28 lbs (13 Kg)
S-HT-30 (oven unit)	22" (57 cm)	38" (96 cm)	13" (32 cm)	90 lbs (41 Kg)
S-HT-30 (timer box)	9" (23 cm)	38" (96 cm)	18" (46 cm)	60 lbs (27 Kg)
S-O-30 (exterior)	43" (108 cm)	47" (119 cm)	25" (65 cm)	295 lbs (134 Kg)
S-O-30 (interior)	31" (80 cm)	40" (104 cm)	19" (50 cm)	NA

Sample Preparation

RD-1000	9" (23 cm)	19" (48 cm)	13" (33 cm)	37 lbs (17 Kg)
RD-3000	9" (23 cm)	19" (48 cm)	13" (33 cm)	47 lbs (21 Kg)
RDS-100	8" (20 cm)	20" (51 cm)	9" (23 cm)	35 lbs (16 Kg)
DC-500	31" (79 cm)	12" (30 cm)	14" (36 cm)	104 lbs (47 Kg)

Test Matrix

TYPE	DESCRIPTION	TEST METHOD					EQUIPMENT	ACCESSORIES
		PSTC	TLMI	ASTM	AFERA	FINAT		
Peel & Release	90° & 180° Peel/Release	101 (A,B,C, D,E,F) 4B	L-IA1 L-IA2 L-IA3	D3330 (A,B,C, D,E,F) D5375 (A&B) D6252	4001 P11	1, 2, 3, 5, 10, 11	AR-2000, AR-1000, PA-1000-90, PA-1000-180 or TT-1100	RD-3000, HR-100 TP-26 SC-100
	Oil Resistance	55					S-O-8 TT-1100 AR-2000 AR-1000	TP-26 HR-100 PF-90
	Wet Spread	15					LC-100 S-OSI-8 TT-1100 AR-2000 AR-1000	
High-speed Release	Release Force of Liner at High Speed		L-1A3			4	HSR-2000 HSR-1000	NA
Tack	Loop Tack	16	Yes	D6195 (A)		9	TT-1100 LT-1000	TP-13/16, SC-100, LTF-100
	Probe Tack			YD2979			PT-1000	NA
	Rolling Ball	6		D3121			RBT-100	NA
	Quick Stick	5			4015		TT-1100	PF-90
Shear	Shear at ambient temperature	14, 107 (A,B,C,D, E, F)	7	D6463 (B) D3654 (A)	4012	8	S-RT-10 S-RT-30	HR-100 TP-23 SC-050 SC-100, TW- 500, TW-1000
Heated Shear	Shear at elevated temperatures	53, 107 (G)	Yes	D6463 (A) D4498			S-HT-30 & S-HT-8 or S-O-8	
	Shear after solvent temperatures	50					TT-1100 S-O-8	HR-100
Thickness	Thickness Measurement	33	T-411	D3652 D645 D374	4006		MI-1000	NA
Unwind	High Speed Unwind Force	8, 13		D1000	4008		HSU-2000 HSU-1100	NA
	Unwind Force	8			4013		TT-1100	UWF-100
Tensile	Tensile Strength of Material	31 & 39	L-1A1 II-E III-A T4940M	D928 D903 D3330 D882 1004 D3759	4004		TT-1100	NA
	Elongation				4005			
Burst	Burst Strength of Perforated Material		Yes				BP-1000	NA
COF	Coefficient of Friction			D1894			COF-1000	NA
Rub	Scuffing or Rubbing Resistance			D-5264			Sutherland® Rub Tester	NA