

Testing services & contract research

THE SCHOOL OF
PACKAGING
MICHIGAN STATE
UNIVERSITY



The School of Packaging offers a wide variety of services, from design and sample making to processing and testing. Projects range from standardized testing to custom studies that may take several months. Facilities are available to design and manage specialized testing contracts.

The School's testing laboratories are equipped to conduct most packaging tests in accordance with the American Society of Testing and Materials (ASTM) and International Organization for Standardization (ISO). In addition, we are a certified ISTA (International Safe Transit Association) test lab. The School also conducts various packaging tests in accordance with TAPPI and AIAG.

LABORATORY FACILITIES

The school of packaging has over 30,000 sq. ft. of laboratory space, including facilities for the following:

- Plastic packaging and spectroscopy (IR, UV/VIS)
- Mass spectrometry
- Plastics processing and converting
- Paper and corrugated packaging
- Glass and metal packaging
- Shock, vibration and compression
- Food packaging
- Medical packaging
- Distribution packaging
- Ergonomics
- Auto identification/RFID/Track & Trace
- Packaging machinery/equipment
- Design/sample making
- Mechanical testing
- Analytical: thermal analysis, headspace analysis, permeability, gas chromatography, optical properties
- Environmental conditioning (temperature and humidity)
- Testing of pallets, reusable racks, and containers

TESTING SERVICES

The tests listed in the next column are routinely performed. Other tests are also available.

DISTRIBUTION TESTS

- Drop testing
- Compression testing
- Shock testing
- Vibration testing (sine & random)
- Cushion testing
- Pallet & container testing

MATERIAL PROPERTY TESTS

- Optical properties: light transmission, color, gloss, haze, opacity, and brightness.
- Thermal and physical properties: glass transition and melting temperature, crystallinity, molecular weight, melt flow index, heat capacity, dimensional stability, heat deflection temperature.
- Mechanical properties: friction, smoothness, tensile, compression, izod impact, burst strength.
- Barrier properties: solubility, diffusion and permeability coefficients (i.e. carbon dioxide, oxygen, water vapor permeability, organic vapor)
- Photo degradation and biodegradation tests: compost ability and degradation.
- Corrosion protection (VCI materials)

PACKAGE INTEGRITY TESTS

- Closure testing
- Testing of insulated containers

CONTRACT RESEARCH

Special Testing and contract research is available through work with individual faculty members. This work includes, but is not limited to:

- Distribution environment measurement & simulation
- Product shelf life
- Product package compatibility
- Package ergonomics
- Composting experiments
- Customized packaging solutions
- Packaging optimization

For more information contact

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Equipment list

Manufacturer	Instrument
TMI	Monitor/Slip and Friction
Thwing Albert Instrument Company	VIR Electronic Thickness Tester
OHAUS	Analytical Balance
OHAUS	Analytical Balance
Atlas Vac Machine	Thermoformer (blister packaging machine)
Lansmont Corporation	Compression Test System
Multiton MIC Corporation	Pallet Truck
Big Joe	Lift Truck
Speedy Packer System	Foam in Bag System
Multivac	Tray Sealer
Bekum	Extrusion Blow Molder
Multivac	Vacuum Packaging Machine
Decca	Decca Feeder Counter
Enercon	Induction Sealer
Ranpak Corp.	Auto Pad Cushioning System
Automated Packaging System Inc.	Airpouch Air Pillow System
Merrill Machinery Comp.	Dry Pill Filling Machine
Shadograph	Dry Filling Machine
Bradman- Lake Inc.	Bradlok Cartoner
Weldotron	L-Sealer
Weldotron	Shrink Tunnel
G- L Industries	Mercury U- Pack
Oden	Liquid Filling Machine
Stone	Skin Packaging Machine
Highlight Industries	Turntable Stretch Wrap Machine
Instron	Universal Testing Machine
TMI	Monitor/Smoothness
TMI	Micrometer
TMI	Elmendorf Tearing Tester
TMI	Monitor/Burst
TMI	Monitor/Burst
TMI/B.F. Perkins	Mullen Burst Tester
TMI	Beach Puncture Tester, PN 74X
TMI	Monitor/Impact
TMI	Notching Cutter
Sutherland Paper Company	Rub Tester
Teledyne Taber	Stiffness Tester

Equipment list

Sutherland Paper Company	Rub Tester
CSI (Custom Scientific Instruments Inc).	Score Quality Tester
United States Testing Company, Inc.	Gelbo Flex Tester
TMI	Crush Tester
ARO	Burst Test Machine
CSI (Custom Scientific Instruments Inc).	Dart Drop Tester
TMI	Dart Drop Tester
Thwing Albert Instrument Company	Elmendorf Tearing Tester
TMI	Basis Weight Testing Machine
Wilkens Anderson Company	Enamel Rater-II
Ray-Ran	Melt Flow Indexer
PTI (Packaing Technologies & Inspection)	Leak Detector
T.M Electronics	Burst Test Machine
ARO	Integrity Tester
ARO	Porosity Tester
ARO	Roller Sealer
Mettler Toledo	Analytical Balance
TMI	Integrating Reflectometer
Carleton Industries Inc.	Burst Tester (Test-A-Pack System 2000)
S-T Industries	Optical Comparator
TMI	Digital Micrometer
The School of Packaging	Slide Angle Tester
Sencorp Systems Inc.	Heat Sealer
Vertrod	Impulse Heat Sealer
Lako Tool	Hot Tack/Seal Tester
Sencorp Systems Inc.	Heat Sealer
Sentinel	Heat Sealer
Sentinel	Heat Sealer
Sencorp	Heat Sealer
Lansmont Corp.	Squeezer
Mocon	Permatran W, MG- Module
TMI	Crush Tester
AVID (Automated Video Inspection Devices)	Bottle Video Bottle Inspection System
TMI	Dead Weight Micrometer
Lansmont Corp.	Vibration Testing Machine
Gavarti Associates Ltd.	Air shipment Pressure Testing
Lansmont Corp.	Drop Testing Machine
Tek-Vac Industries	Vacuum Chamber
Lansmont Corp.	Shock Table
Lansmont Corp.	Cushion Testing Machine

Equipment list

Geami	Expander
Geopax Ltd. (Now Geami)	Single Web Expander
Hot Pack	Environmental Chamber
EGC (Honey Well)	Environmental Chamber
Kellogg Refrigeration	Environmental Chamber
Instron	Universal Tester, Model 4201 ?
EGC (Honey Well)	Environmental Chamber
Lab-Line instruments Inc.	Environmental Chamber
Norlake Scientific	Environmental Chamber
Precision Scientific	Thelco Oven
Precision Scientific	Thelco Oven
Teledyne Gurley	Digital Stiffness Tester
Secure Pak Inc.	Electric Torque Tester
AO Spencer	Dark Field Quebec Colony Counter
OHAUS	Balance
Thwing Albert Instrument Comp.	PCA-Score Bend Tester
Q-Panel Company	Q_U-V Accelerated Weathering Tester
Waters 2695	HPLC
Waters	GPC
Hewlett Packard	GC
LI -840	Co2, H2O Gas Analyzer
Thermo Scientific Electron Corp.	Trace GC Ultra
Hewlett Packard	GC 5890
Labconco	Steam Washer
Thermolyne	Electromagnetic Stir
Barnstead International	Electromagnetic Stir
Mettler Toledo	Balance
Rheotek	Rheotek Polymer Viscometer RPV-1
Perkin Elmer Instruments	UV/VIS Spectrometer
Perkin Elmer	Lambda 25 UV/VIS up for annual maintenance
Hunter	Colorimeter
Bruker Optics	FT-IR
SHIMADZU Corporation	FTIS Fourier Transform Infrared Spectropho- tometer
Leitz Labovert FS	Inverted Transmitted Light Microscope
OHAUS Adventurer	Balance
TA Instrument's	DSC 2010 Differential Scanning Calorimeter
TA Instrument's	DMA Q 800
TA Instrument's	TGA- 2950 Thermo Gravimetric Analyzer
TA Instrument's	DSC
TA Instrument's	TMA Thermo mechanical Analyzer

Equipment list

Illinois Instruments	Head Space O2/Co2 Analyzer
Whirlpool	Microwave
OMEGA	PHB-212 Microprocessor pH Meter
OHAUS Navigator	Balance
Precision Scientific	Vacuum Oven
National Appliance Company	Vacuum Oven
Blue -M	Constant Temperature Bath
Blue -M	Constant Temperature Bath
Labconco Corp.	Closed Glove Box
ALPHA M.O.S	Fox 3000 Electronic Nose
Labconco	Laboratory Steam Washer
OHAUS Adventurer	Balance
OHAUS Voyager	Balance
Mettler AE160	Balance
Fisher Scientific	Ultrasonic Cleaner
CARVER	Hydraulic Press M/C
Beckman	Head Space Sampler
Emerson	Microwave Oven
GS Blue M Electronic	Electric Oven
Rand Castle	Extrude Micro
Thermotron	Thermotron Conditioning Chamber
Thermotron	Thermotron Temp. & RH Control Chamber
Precision Scientific Co.	Oven
Blue -M	Oven
Precision Scientific Co.	Oven
Fisher Isotemp 100 Series	Oven
Labform	Hydro Trim Model 1620 Thermoformer
Killion	Extruder
Killion	Blow Film Extruder
Polymar Machinery	B.T.P. Granulator
Hermes	Horizontal SAW
Beckman	L8-55M Ultracentrifuge
International	Centrifuge
MIRAK	Electromagnetic Stir
Perkin Elmer	Spectrum 1000 IR Spectrophotometer
Thermo Electron Corp.	Trace GC Ultra
VTI Corp.	Rubotherm
TMI	Burst -1000 Tester
VTI Corp.	SGA-100 Symmetric Vapor Sorption Analyzer
Mocon	Ox-Tran (ML Module)

Equipment list

Mocon	Permatran -C Mc Module
Mocon	Permatran- W
Mocon	Permatran -W
Mocon	Ox-Tran (MH Module)
Illinois Instruments	Oxygen Permeation Analyzer
Laurell Technologies Corp.	Centrifugal Mixer
OHAUS Voyager	Balance
Vibrac Corp.	Torque Machine
Sure Torque Inc.	Torque Tester
Sure Torque Inc.	Torque Tester Display
ATC	Tray Leak Tester
Metrohm	Karlfischer Titration
Panametrics Magna-Mike	Thickness Gauge
	Legibility Testing Machine
Bridgeport	QC 2000 Comparator
Sartorius	Digital Balance
Esco Class-II BSC(Airstream)	Biohazard Safety Cabinet
Mocon	Package Leak Tester
Pelouze Healthometer	Balance
Mettler PM 2000	Balance
Secure Pack Inc.	Electronic Torque Tester
Artios (Kongsberg)	Corrugated Board Cutting Design Table Machine
Emco Maier	Emco PC Mill 50
Z- Corporation	Spectrum Z 510
Z- Corporation	Powder Recycling Station
ACME Steel Comp.	ACME Silver Stitching Machine
S&S	Corrugated Paper & Board Cutting Machine
HOBBS Manufacturing Co. Jacques Shear	Board Cutting Knife
Trav C&C	Paper Cutting Machine
Ortman-Miller Division Garlock	Alfa Hydraulic Precision Sampler Cutter
Craftsman Sears, Roebuck & Company	Grinder (Sander)
Craftsman	Grinder
Dremel	Disc/Belt Sander
Delta Milwaukee/ Rock Well Mfg. Co.	Band Saw
Chicago Electric Power Tools	12" Slide Compound Miter Saw
Craftsman (Sears)	Table Saw
Craftsman Sears, Roebuck & Comp.	Drill Press
Atlas Press Comp.(Clausing Division)	Drill Press