



*For a Total Solution to all of your
Materials Testing Needs*

Textiles Coated zeros in on the right testing machine with ADMET

Textiles Coated International (TCI) has been manufacturing in Amherst, New Hampshire since 1985. Its products include flexible ducting, spray shields, bladders, tank liners and sealants, belting, joint sealants and gasket tapes for harsh environments. Textiles Coated PTFE composites and laminates can be found in industrial applications worldwide since they are engineered for the most challenging thermal and chemical environments.

TCI focuses on consistently manufacturing quality products and continually provides new material solutions to assist the evolving needs of its customers. Both of these missions require rigorous testing of products under development and in manufacture. One series of tests conducted by the company requires a universal test frame to carry out tensile, tear and adhesion tests.

TCI had a manual test machine that predated the company. When it came time to replace the older test frame, TCI CEO, John Tippettt, turned to ADMET. The results are an appropriately sized tabletop machine that handles all of their development and quality control tensile, tear and adhesion testing of both fabrics and films.

Textiles Coated International (TCI), based in Amherst, New Hampshire, is a leading manufacturer of high performance PTFE (polytetrafluoroethylene) composites and laminates that feature outstanding chemical resistance, low flammability and leachability, and excellent lubricity.

Its products are used in a wide range of industries, including refineries, steel mills, food processing, foundries, smelters, pulp and paper, power generation, cement manufacturing and other industries that use harsh chemicals.

Products range from non-metallic expansion joints to insulation jacketing, flexible ducting, release liners, joint sealant & gasket tape, robot covers, tank sealing and liners, floating roof materials, bladders & bellows, spray shields, and way covers.

TCI is constantly modifying current product offerings and developing new products to meet customer needs. Explained Mike Fariz, TCI Lab Manager, "The majority of the testing that we do outside of R&D is quality assurance to make sure that our products match the data sheets."

Newly developed products include CHEMDUIT/P™, a flexible PTFE ducting product that is rated for a constant temperature of 500°F. It uses an external PTFE ring instead of typical steel rings to eliminate corrosion, bending and failure.

For both its laminated fiberglass products and PTFE films, TCI uses a cross-pattern lamination process containing oriented PTFE film to give added multidirectional strength.

SOLUTION OVERVIEW

Industry: PTFE composites and laminates manufacturing

ADMET Product: 5kN tabletop universal testing machine with digital controller

Customer: Textiles Coated International

Application: Tensile, tear and adhesion testing of textiles and thin films

TCI's lab tests several chemical and materials properties for both research & development and production quality assurance purposes.

A key characteristic, beyond the chemical resistance properties for the products, is the strength of the material. Textiles Coated tests the tensile, shear and tear properties to ASTM D751 standards using a universal testing machine.

Tensile tests pull on a cross-section of film or fiber to failure.

Tear tests use in-house custom-developed grips that are close together and form a fold in the materials. The universal machine rips the fibers so test results consist of a series of peak numbers as the individual yarns are tested to failure.

Adhesion tests test bonds between layers of materials. The material is heat sealed with a splicing film and the two layers are pulled. This measures bond strength which, as with the tear test, shows a series of peak loads throughout the test.

TCI was using a Tinius Olsen machine originally built in the 1950s or 60s that required close operator attention and manual recording of test results. Technology had clearly advanced and John Tippett, Textiles Coated CEO, decided it was time to upgrade.

He said, "I was looking for a more accurate tensile tester for lower tensile strengths so we could do thin films. The Tinius Olsen was good at 1,200-1,400 pounds per inch but we wanted to get some consistency at lower values for thin films."

Introduces digital controls

Tippett and Fariz selected an ADMET single column 5kN tabletop universal testing machine, which is now part of ADMET's eXpert line. The new unit features a digital controller that both controls the load rate and records test results.

It requires much less operator intervention. "If I'm doing multiple tests, for instance, once I set my zero point, it automatically goes back to home and is ready to start a new test. Before, I had to set zero each time," said Fariz.

The ADMET unit also delivers consistent results especially at lower values. Using a digital controller similar to ADMET's currently offered Precise Controller, the machine can be programmed with different test routines. The routines include information about specific load

cells, fixtures, grips, test speeds and data analyses. TCI uses a single routine for all of its tests.

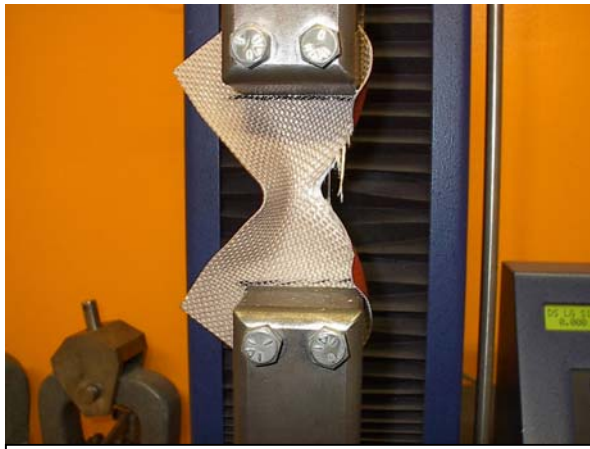
Although Textiles Coated records only peak loads for tensile tests, the machine also calculates averages and other values. It is connected to a dedicated personal computer with database

capabilities. The computer's data recording and graphing functions are helpful in reporting adhesion test results. "Adhesion tests have a series of peaks, so we usually take the average, but we can record and graph everything," said Fariz.

The production test results are primarily used for in-house quality assurance although, upon customer request, reports are sent with the product to certify compliance with the data sheets.

The new machine serves all of TCI's tensile, tear and adhesion test needs. "The only time I've used the Tinius Olsen since we got the ADMET machine was at the beginning. We were curious to see how accurate the other one was so we did a few tests in the beginning to make sure everything was right. But we haven't used the old machine since," said Fariz.

Added Tippett, "I believe that our results are more accurate than we used to get and, most importantly, we can use the ADMET machine to test thin films."



TCI conducts a grab test.