Standards
There are two types of standards that are used to evaluate Solar Thermal systems for the North American market access; SRCC and CSA. These standards, developed by the Solar Rating and Certification Corporation (SRCC) and CSA, include safety and performance based requirements. US Federal rebate programs are tied to compliance with the SRCC standards. Access to the Canadian market for Solar Thermal products requires compliance to CSA Standards as demonstrated through a Standards Council of Canada (SCC) accredited lab.

U.S. Standards
SRCC STANDARD100-08: Test Methods and Minimum Standards for Certifying Solar Collectors. The SRCC standard calls out the following standards for test procedures:

- ISO 9806-3:1995 - Test methods for solar collectors – Part 3: Thermal performance of unglazed liquid heating collectors (sensible heat transfer only) including pressure drop
- ANSI/ASHRAE 93 -1986: Methods of Testing to Determine the Thermal Performance of Solar Collectors

Canadian Standards
- CSA F378-87 (Reaffirmed 1998): Solar Collectors
**Tests: SRCC and CSA**

The better you understand the tests required by the SRCC and CSA standards, the more easily you will be able to design products that can pass North American certification on the first pass. This understanding also enables the manufacturer to get their product to the market faster, with minimal delay due to compliance testing. The following are the tests that certification bodies are required to conduct on the Solar Thermal Collectors to verify compliance.

- **Liquid Collector Static Pressure Leakage Test:**
  - Pressure maintained at ±1%, Heat Transfer Fluid @ ±3°C of ambient.

- **Air Collector Static Pressure Leakage Test:**
  - 750kPa air supply

- **Outdoor No Flow Exposure Test:**
  - 30 days exposure. 17MJ/m2 solar energy and 90 min of >900 W/m2 irradiance exposure.
  - Cold Fill Test

- **Thermal Performance under clear sky conditions**

- **Uniform Positive and Negative Load Tests (Only for CSA F378):**
  - +1.5kPA and -2.0kPa for 10 min.

- **Second Liquid Collector Static Pressure Leakage Test**

- **Second Air Collector Static Pressure Leakage Test**

- **Air Collector Rupture or Collapse Test:**
  - Same as Air Collector Static Pressure Leakage Test but to rupture. Up to 750kPa max pressure is maintained.
Materials Testing
Solar Thermal is one of the fastest growing technologies in the renewable energy market. Specific materials testing is required to receive safety certification of Solar Thermal products for the Canadian market. Understanding the tests and acceptable criteria will help manufacturers design products that will pass certification on their first testing cycle.

Materials Tests
- Weather Simulation Chamber Xenon-Arc Weatherometer: ASTM G26 – 120 min of light, 40 min of spray de-ionized water @ 15°C.
- Mini-Collector – Use this method for 12 months. Could take longer.

Test all Materials for
- Optical Transmittance – ASTM E903 and E408
- Tensile Strength – ASTM D882 and D638
- Thermal Shock – Chamber between 90°C to -40°C
- Impact Strength – 0.12 Kg Steel Ball
- Humidity Exposure – 30 Days at 98% RH – ASTM D2248
- Salt Spray Exposure – CGSB 1-GP-71, ASTM B117
- Tape Test – CGSB 1-GP-71
- Hardness determination – ASTM D2240 and ASTM C661
- Immersion Test – 100°C oven.
- Hose Pressure Test – ASTM D380
- Adhesion Test – ASTM C794

About Intertek
Intertek is a leading provider of quality and safety solutions serving a wide range of industries around the world. From auditing and inspection, to testing, quality assurance and certification, Intertek people are dedicated to adding value to customers’ products and processes, supporting their success in the global marketplace.

Intertek has the expertise, resources and global reach to support its customers through its network of more than 1,000 laboratories and offices and over 26,000 people in 110 countries around the world.