Tamson Instruments
Specification sheet

Tamson Freezing Point Tester (TFPT) & Tamson Solidification Point Tester (TSPT)

ASTM D1177 - ASTM D852 - ASTM D1493 (obs.) - ASTM D6875

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
<th>TFPT</th>
<th>TSPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>P/N 230V/50Hz</td>
<td></td>
<td>31T0500</td>
<td>31T0510</td>
</tr>
<tr>
<td>P/N 230V/60Hz</td>
<td></td>
<td>31T0505</td>
<td>31T0515</td>
</tr>
<tr>
<td>P/N 115V/60Hz</td>
<td>Not available</td>
<td></td>
<td>31T0520</td>
</tr>
<tr>
<td>Power</td>
<td>[kW]</td>
<td>2.8 max</td>
<td>1.6 max</td>
</tr>
<tr>
<td>Used materials inside bath</td>
<td></td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td></td>
<td>-70..ambient°C</td>
<td>-5..+60°C*</td>
</tr>
</tbody>
</table>

* Optionally up to +120°C

Reading | Standard °C, °F on request |
Setting ± | [°] | 0.1 | 0.01 |
Stability ± | [°C] | 0.1 | 0.02 |
Heating | [kW] | 1.4 | 1.1 |
Bath volume | [L] | 11 | 5 |
Dimensions cooler with stirrer, WxDxH | [mm] | 580 x 770 x 1200, 100kg | 440 x 420 x 1100, 42kg |
Dimensions control, WxDxH** | [mm] | 400 x 340 x 320, 8kg |

CE | Conforms to CE regulation |

* Please note that table shown on picture is not included

Automated determination
Stainless steel bath
Software controlled stroke movement
Predefined settings for test methods
Able to create own test method

General

The TFPT and TSPT have been developed for the automated determination of the freezing point of aqueous engine coolant solutions, windscreen antifreeze liquids and de-icing fluids and the solidification point of industrial organic chemicals.

The TFPT tester has been developed to determine the freezing point at temperatures down to -70°C. The TSPT has been developed to determine the solidification point down to -5°C.

The freezing/solidification point involves the determination of the time-temperature curve prior to freezing/solidification (cooling) and the determination of the horizontal or flattened portion of the freezing/solidification curve.

The freezing point of coolant solutions is of greatest significance in order to protect water cooled engines from freeze damages. Also of great significance is the freezing point of antifreeze liquids for de-icing of windscreen and aircraft wings.

The solidification point of industrial organic chemicals is used to determine the purity of the chemical. The closer the solidification point reaches that of the pure industrial organic chemical, the purer the sample.

Apparatus

The TFPT and TSPT determine the freezing and solidification points in an easy, objective and comfortable way. Due to the automated detection of the horizontal or flattened portion of the temperature cooling curve, the measurement will be performed with high accuracy and high repeatability.

The TFPT and TSPT consist of a refrigerated bath, on which a stirring mechanism is mounted and a separate control unit. The control unit has integrated embedded Industrial PC and is using Windows® 10 based software. The industrial PC is operated by using a keyboard. The control unit is running on 24V DC. The test procedure, the parameter settings, the measurement and the data acquisition will be performed with the software, where the settings for several test methods are predefined.

All parameters can be set individually, so that the users are able to create their own test method. After the test, the measured values of the freezing curve will be stored and saved on a USB-stick. The stored data can also be exported to a standard tabulation program (e.g. Excel®).

The stirring mechanism for the stroke movement is also software controlled. The stroke rate is adjustable and can be set by the controller.
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During the measurement the motor will be automatically switched off after the temperature minimum has been detected.

The TFPT is equipped with a powerful ultra-low cooling thermostat that enables the operator to conduct measurements down to -70°C. For more information on the cooler, please see the Tamson TCC-B specification sheet. The TSPT is equipped with a smaller low temperature circulator that enables measurements down to -5°C. The TSPT is only suitable when glassware is used that has a smaller outer dimension than 26 mm. For example the glassware prescribed in ASTM D852 and ASTM D6875. For more information on the cooler, please see the TLC15-5 specification sheet. The cooling circulator can be used either as a standalone unit or can be controlled via the freezing-point software.

<table>
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<tr>
<td>TSPT</td>
<td>-</td>
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<tr>
<td>TFPT</td>
<td>-</td>
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**Standard scope of supply**
- Refrigerated bath with lid
- Stirrer device (which is mounted on the bath)
- Stand-alone controller with embedded PC
- Temperature sensor with Lemo plug
- Double walled test glass
- Wire stirrer, made from 1 mm stainless steel wire
- Stopper with two bore holes, one for temperature sensor, one for wire stirrer
- Keyboard and mouse for operating the controller

**Primary benefits of TFPT and TSPT:**
- Automated
- Predefined settings for test methods
- Able to create own test method in software
- Stirrer made of stainless steel wire
- Special designed stopper allows seeding during the test to prevent supercooling
- Temperature sensor sensitivity of 0.01°C
- Customer can set temperature reading interval between 0 and 60 minutes
- Stainless steel inner bath
- Robust

TCC-B without stirring mechanism for TFPT