

# FULLY AUTOMATED APPARATUS for the DETERMINATION of LOW TEMPERATURE FLOW (LTFT)

- Conforms to ASTM D4539 Low Temperature Flow Test
- Fully Automated Operation
- Eliminates the Tedium of the Manual Test
- Capacity for 6 Samples
- User Friendly Window Based Software
- Programmed to Cool at 1° to 6°C/hour
- Liquid Bath Stability of  $\pm 0.1^{\circ}\text{C}$
- Operating Range from  $+15^{\circ}$  to  $-55^{\circ}\text{C}$

ASTM D4539 Low Temperature Flow Test (LTFT) is generally recognized as a better predictor of diesel fuel filter plugging temperature than the more commonly used ASTM D6371 or IP-309 Cold Filter Plugging Point (CFPP). The test, however, is not widely used since it is long and tedious, requiring operator attention at inconvenient times.

**Model 362** is a floor model liquid bath capable of unattended fully automated determination of LTFT of fuels by ASTM D4539. The full process is controlled by an onboard Windows based PC. The proprietary software allows the operator great flexibility to configure the test parameters, etc. A full year of result data is stored in the computer hard disk. The data may be downloaded for future review or statistical analysis or transmitted to a LIMS.

From 1 to 6 samples may be measured at one time. The samples may be the same fuel or multiple different fuels.

The test starts with the operator installing up to 6 sample beakers (plus a dummy sample for temperature measurement) in the liquid bath's rack. After inserting the filter holders and making the connections for the vacuum, the computer program is started.

A semicircular arrangement of sample beakers is used such that filter distance to the receiving beaker of each sample is exactly the same. This is to insure that all dimensions of the apparatus are identical to the specifications of ASTM D4539. A common receiver beaker is used for all 6 samples.

When the sample cools to the pre-selected temperature, the electronically controlled vacuum is applied and the time to filter sample to the receiver is timed. If the time is less than 60 seconds, the cooling continues at  $1^{\circ}\text{C}/\text{hour}$  (or any selected rate up to  $6^{\circ}\text{C}/\text{hour}$ ) and the next sample is filtered as before. The process continues automatically until the temperature is reached when it takes the fuel longer than 60 seconds to filter.

For Method:

ASTM D4539



▲ Model 362

The filtered fuel volume level is measured by a non contact laser detector. After the completion of each sample's filtration the receiver beaker is automatically drained into a waste receiver and ready for the next filtration.

**Model 289** is identical to Model 362 but lacks the receiver volume measurement, needs a user supplied PC, and comes without the needed filters and glassware.

**Model 418** is an economical, compact, bench model for automated LTFT testing. Each of the two test positions has a directly refrigerated dry bath (no bath medium required). It is intended for quality control laboratories that require only pass/fail results.

The dimensions of the caster mounted floor cabinet of Models 362 and 289 are 38 x 26 x 43 inches high (97 x 66 x 109 cm). The shipping weight is approximately 575 Lb. Model 418 dimensions are 28 x 27 x 18 inches high (70 x 60 x 46 cm.).