Total Temperature Value (TTV)

(This information is extracted from the **Help** section of the TRW software.)

In many applications there is a need to evaluate thermal performance - how well was a certain temperature band maintained over time. In some applications the ideal ambient temperature changes over time. At any given time there is an optimum temperature range for best results.

This optimum temperature profile - sometimes called the **zone of thermal neutrality** - can be modelled as a single or a series of equal length time periods, where each period has a lower an upper temperature. An index can be calculated for that period based on the distance the actual temperature strays outside the two limits. The total temperature value (TTV) for that period is calculated as the sum of the number of degrees outside the limits for each temperature sample in the period. Samples that are within the limits are not counted - only samples where the temperature is outside the limits are counted, and the further outside the limits the sample is, the higher its contribution for the TTV value for that period. The TTV value is thus a temperature-time integral of the deviation from the ideal range.

Temprecord for Windows allows you to specify up to 20 TTV periods of any duration, and then specify a lower and upper temperature limit for each period. The TTV value is calculated separately for the lower and upper limits for each time period, and total TTV results are also calculated.

If the number of samples corresponding to the TTV periods specified exceeds the number of samples between the start sample and the last sample, the number of periods actually shown may be less than the number specified. Also, this may mean that the number of samples used to calculate the TTV value for the last shown TTV period is less than a full TTV period's worth. In this case the TTV value for the final period will have less relevance.

The units of the TTV values are **degree-samples**, because the method of calculation involves summing the temperature deviation for each sample. This means that the displayed value depends on both the sample rate and the selected units (degrees F or degrees C). When comparing TTV values from different data records, the sample rate, selected units, and TTV period should be the same for both files.

The TTV statistics are shown in the statistics view. The TTV statistics can also be printed and exported.

See also:
Changing the view mode
Statistics view
Statistics View Options
Printing Options
Export Options
Process Hygiene Index

TTV (Total Temperature Value) Statistics

Temprecord for Windows can also calculate and display TTV (Total Temperature Value) statistics. To enable this facility, click on Options/Statistics, and make sure Show TTV Statistics is checked. The TTV statistics are displayed after the statistics for all samples and statistics for samples between the start and samples are displayed. The TTV statistics are calculated for one or more periods starting from the start sample. The temperature limits, duration and number of TTV periods are set using the statistics view options

For more information on the derivation and application of TTV statistics, see the topic Total Temperature Value. There are also options that control whether the TTV statistical data is shown, printed or exported. See Graph View Options, Printing Options, and Export Options for more details.