

Temperature monitoring in the storage of blood preparations using the **testo 176 T2 data logger**.



Safely store a valuable commodity.

Blood-derived preparations such as blood plasma, red and white blood cells and platelets are an essential element in human medicine. For example, the production of blood clotting factors (for haemophiliacs perhaps), human albumin and immunoglobulins is based on these. Immunoglobulins are used in serious operations, antibody deficiency and autoimmune disorders, serious infections and sepsis, among other things. Blood plasma is also directly used in cases of blood loss and in operations.

Consistent adherence to the correct temperature conditions is crucial in the storage of blood preparations – because this is the only way to guarantee preservation of all the active ingredients. The testo 176 T2 data logger offers optimum protection by monitoring the temperatures in blood banks reliably and accurately. Thanks to the testo 176 T2's high-precision Pt100 technology, even the smallest limit value violations do not go unnoticed. The data logger's non-volatile memory and tamper-proof file format also offer an especially high level of security.



The challenge.

Legal regulations require that blood components and blood preparations are only stored in refrigeration facilities that are intended for this purpose (e.g. blood depots, blood banks or laboratories). The storage conditions for these products must be constantly monitored in order to ensure quality.

The permissible storage temperature of packed red blood cells is +4 °C (tolerance ± 2 °C). The storage duration in this temperature corridor is normally between 42 and 49 days.

Fresh frozen plasma is usually stored at -30 °C (for max. 12 months) or -42 °C (for max. 24 months). In both cases, the tolerance is ± 3 °C.

Platelet concentrates can be stored in special incubators, under constant agitation, at +22 °C (tolerance ± 2 °C) for a maximum 5 days.

Therefore, subject to the specific application, it is necessary to monitor individual temperature limit values constantly, accurately and reliably, otherwise the quality of the valuable blood products cannot be guaranteed. Automatic monitoring and documentation can be implemented using a suitable data logger.

In the event of limit value violations, prompt action is of crucial importance. Hence, at all times limit value violations should be quickly and clearly identifiable from the exterior. This also prevents the refrigerator door being opened and closed more often than is necessary, which lets cold escape.

Ideally, temperature data should be read for the purposes of documentation and control without the temperature monitoring being interrupted. Furthermore, the monitoring solution must ensure that the temperature readings cannot be changed, either intentionally or unintentionally. This is the only way to comply with the stringent monitoring and documentation guidelines and guarantee the quality of the blood products long-term.

The solution.

Use the testo 176 T2 to carry out high-precision, uninterrupted measurement and documentation of temperature values when storing blood preparations. The ultra-flat Pt100 ribbon cable probes enable the refrigerator temperature to be monitored at up to two measuring points simultaneously, without the data logger itself being in the refrigerator. Therefore the current readings, the minimum and maximum temperature, the set limit values, the number of limit value violations and the remaining battery life (in days) can all be displayed externally. The large, easy-to-read display and intuitive one-button operation make the Testo data logger even easier to handle.

The data logger does not have to be removed from the refrigerator when data needs to be read or saved. Thanks to its data collection function, measurement data can be retrieved from the logger via an SD card without interrupting the measurement. Thus, continuity of recording is guaranteed. Alarm acknowledgement can also be implemented on the logger itself if required.

In the unlikely event that the batteries of the logger are drained (battery life: 8 years), there is no risk of losing any data. The non-volatile memory of all Testo data loggers means that the recorded readings can be restored even when the batteries have been completely drained. Data is saved in a tamper-proof file format, which guarantees the safety and authenticity of the evaluated data at all times.

An exceptional degree of safety is required in the field of configuration and analysis software, and Testo has come up with a professional solution in the form of the validatable ComSoft CFR software. Two other software solutions are ComSoft Basic, which is available for download free of charge, and ComSoft Professional, featuring a number of analysis tools.

High-precision temperature recording with a high level of security and reliable monitoring: With the testo 176 T2 and the Pt100 ribbon cable probes, which can be ordered separately, Testo has the ideal solution for monitoring valuable blood preparations.



The testo 176 T2's large, easy-to-read display means that limit value violations can be identified quickly and easily.



Reliable monitoring of their storage temperature means that blood preparations can safely be put to further use.



With its large measuring range of up to -100 °C, the 176 T2 is also able to accurately monitor the storage of blood plasma.



testo 176 T2 – all the advantages at a glance:

- High data security
- Memory for 2 million readings
- High-precision Pt100 sensors

More information.

For more information and answers to all your questions concerning temperature monitoring when storing blood preparations at www.testo.com.