

SAHARA-III

Dry warming of blood components



Safe warming procedure

- The risk of contamination from water-borne pathogens, as can occur with traditional water baths, is avoided
- Active drying of the storage bag surface provides hygienic conditions in the area immediately surrounding the blood product
- The temperatures of the heating plate and circulating air are adjusted so that an equivalent blood product quality can be achieved in comparison with the water bath procedure
- Standardised thawing and heating process
- Delayed key response prevents unintentional interruption of the heating process

SAHARA-III

- Pre-settings of heating times and ambient temperatures are not required

Temperature monitoring

- Contactless determination of the blood product temperature using an infrared sensor
- Quick availability of frozen blood products via ice-free identification
- Display of the blood product temperature in the range between 29°C and 37°C in 1°C increments
- Documentation via protocol printer possible



Protocol printer module

- Documentation of the progression of the blood product temperature
- Documentation of the system test
- Documentation of the error message in the event of a malfunction



Storage bag agitation

- Gentle agitation in order to achieve a homogeneous temperature distribution within the blood products

Fast thawing function

- Quick thawing and heating of blood products

37°C function

- Warming at a constant ambient temperature of 37°C
- Simultaneous warming of different blood products
- Simultaneous warming of storage bags with different filling quantities

Integrated system test

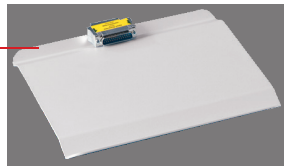
- Inspection of device functions
- Calibration of the temperature sensors
- Use of additional measuring apparatus not required
- Documentation via protocol printer possible

Modular structure

- Rapid switching between the basic model and MAXITHERM
- Additional functions such as infusion heating possible

Heating plate module

- Quick thawing or heating of blood products via additional contact heat



Infusion heater module

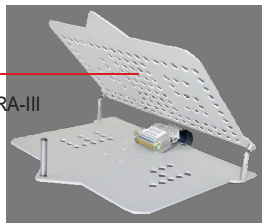
Heating to 37°C of

- infusion solutions
- tubes
- instruments
- contrast agents etc.



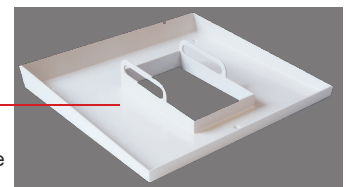
MAXITHERM module

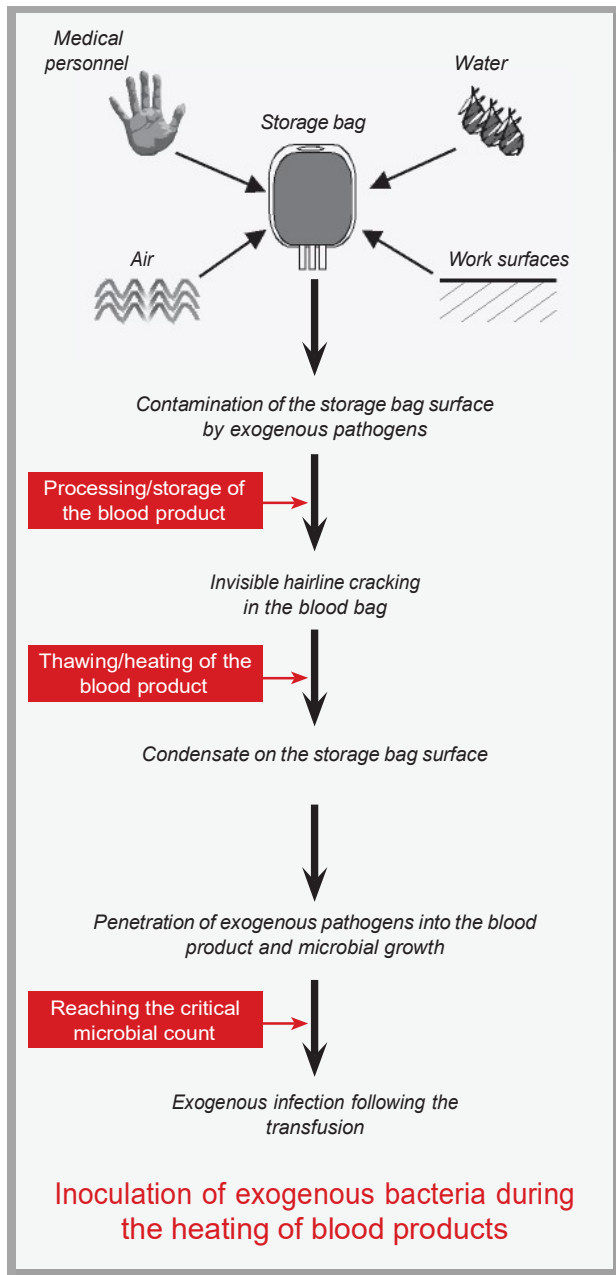
- Expands the capacity of the SAHARA-III to up to 6 storage bags



Stainless steel collecting tray

- Allows for the collection of plasma leaking from defective storage bags
- Makes it easier to clean the SAHARA-III





What sources are there for microbial contamination of blood products by exogenous pathogens?

Exogenous bacteria originate from the skin of the blood donor, from water, the air or from elsewhere in the environment, from surfaces or even from the hands of medical personnel. These can be inoculated during the blood collection and during the processing and storage of blood products.

Particularly during the processing and storage of blood products, mechanical influences can cause multiple small tears to form in the bag systems (predominantly in the frozen state), through which micro-organisms can subsequently penetrate into the products. Even when warming blood or blood components, preparations may become contaminated (see diagram), namely when

- the immediate environment of the blood product (e.g. the warming medium) is itself contaminated or
- the outer surface of the blood bag is contaminated with germs.

Various cases of the transfer of *Pseudomonas* bacteria have been observed during the thawing of previously uncontaminated FFP and cryoprecipitates using water baths.^{4,5}

1. Montag T. et al. Bakterielle Kontamination von Blutkomponenten (Bacterial contamination of blood components), Bundesgesundheitsbl. - Gesundheitsforsch. - Gesundheitsschutz 42, 132-142, 1999
2. Sazama K. Bacteria in Blood for Transfusion, Arch. Pathol. Lab. Med., 118, 350-365, 1994
3. Puckett A. Bacterial contamination of blood for transfusion: a study of the growth characteristics of four implicated organisms Med. Lab. Sci. 43, 252-257, 1986
4. Centers for Disease Control Follow-up on nosocomial *Pseudomonas cepacia* infection, MMWR Morb. Mortal Wkly Rep., 28, 409, 1979
5. Casewell M. W. et al. Operating theatre water-baths as a cause of *Pseudomonas septicaemia*, J. Hosp. Infect., 2, 237-240, 1981Centers for Disease Control Follow-up on nosocomial *Pseudomonas cepacia* infection, MMWR Morb. Mortal Wkly Rep., 28, 409, 1979