



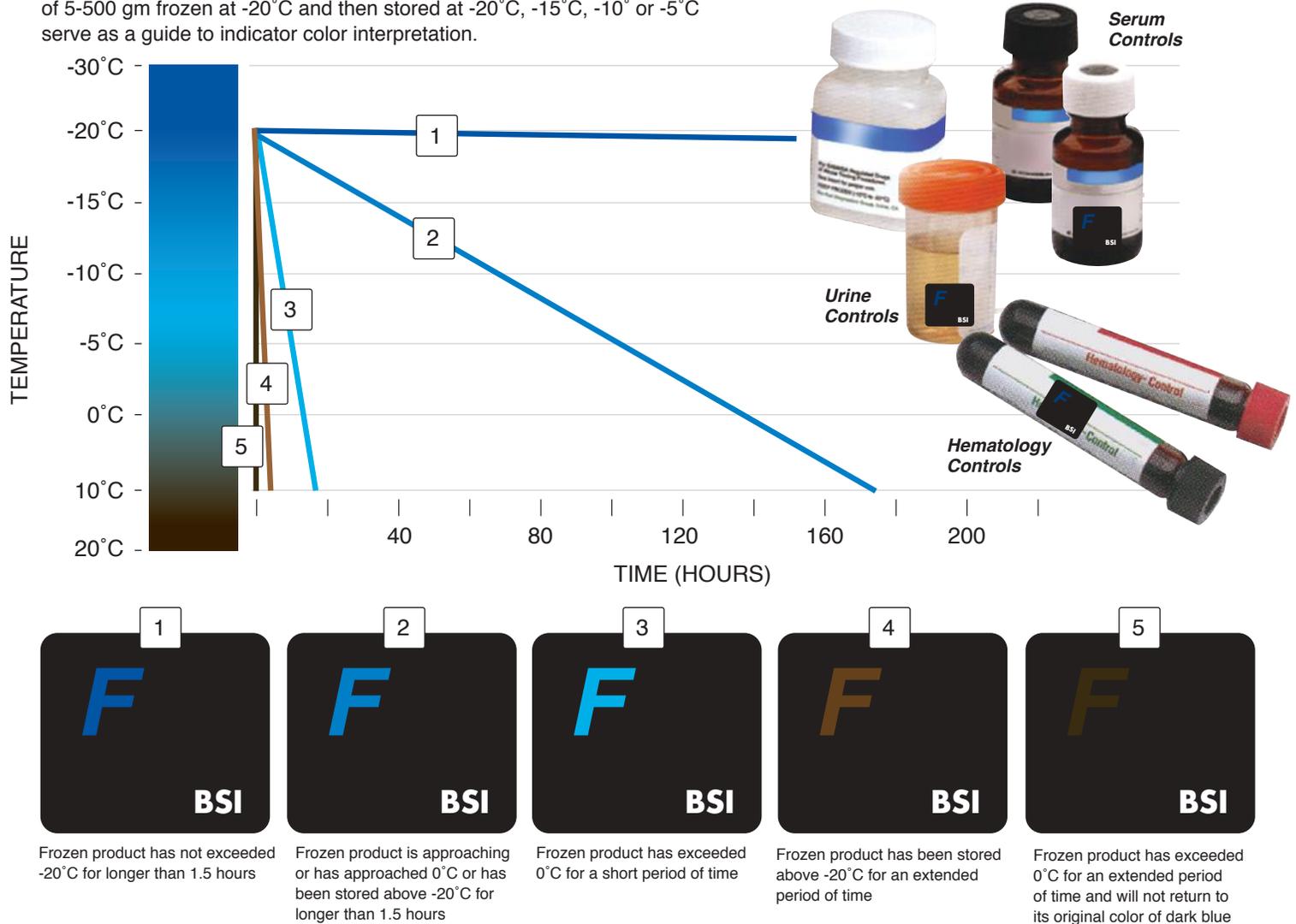
Label shown activated at -20°C

StaFreez® Irreversible Liquid Crystal Freeze-Thaw Indicator

Most leading manufacturers of biological compounds/chemicals have warnings on their labels to keep their materials stored at specific temperatures (generally 2° - 8°C or be kept frozen). As most technicians know, not only is it important to maintain these storage temperatures but also once out of storage to allow these materials to equilibrate prior to use, such as pipetting. StaFreez® irreversible indicators can be affixed directly on the container before or after removal from storage and used as a thermometer to let the technician know when the material has reached its equilibration temperature and to monitor the materials while out of storage so they do not exceed specified temperatures.

Protecting and monitoring your vital resources is essential!

As shown in the illustration below the average color progression for samples of 5-500 gm frozen at -20°C and then stored at -20°C, -15°C, -10° or -5°C serve as a guide to indicator color interpretation.



StaFreez® indicators are affected by the same variables which affect your heat-sensitive samples. The color of activated indicators is dependent on the frozen product **temperature** and **time** at that temperature, the **size** or **mass** of the frozen sample, and the heat transfer characteristics of the frozen sample container. The color dependence of StaFreez® indicators on these variables assures you that the indicator will **accurately monitor the temperature history of your precious frozen materials.**

When frozen samples monitored with StaFreez® indicators are continuously stored at -20°C or below, the color of the activated

indicators will remain dark royal blue for at least one year. If, however, the frozen sample is exposed to temperatures above -20°C, the indicator will change color; the nature and degree of the color change depend on the temperature of the sample and the time at each temperature. Because of the temperature-time dependence of the irreversible indicator, color-temperature interpretation would be aided by labeling the frozen product with the date on which the indicator was applied. **After the dark royal blue color on an activated StaFreez® indicator begins changing, exposing the sample to a lower temperature will not restore the indicator to its original color.**