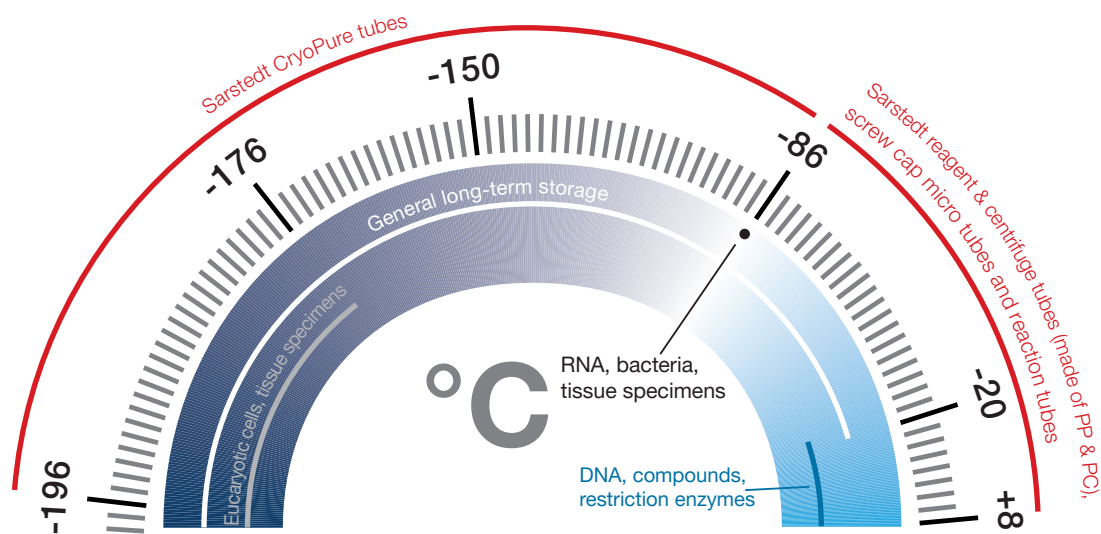


Freezing Sarstedt Tubes



Backup storage of a range of substances and samples sometimes requires storage temperatures below 0°C. DNA or restriction enzymes, for example, are stored at +8°C to -20°C or RNA, bacteria or tissue specimens at up to -80°C. At these low temperatures, however, the plastic vessels typically used for storage are exposed to excessive strain. As a rule, Sarstedt therefore proposes to only use **tubes** and **storage boxes** made from suitable plastic materials like, for example, polypropylene or polycarbonate. Moreover and in view of the safe sealing principle that is of particular importance during and after the thawing process, **screw cap tubes** rather than push cap tubes are the products of choice. Sarstedt's screw cap micro tubes are ideally suited for these purposes. For the storage of tissue specimens or eucaryotic cells at temperatures up to -196°C we exclusively recommend using our **CryoPure tubes**, which have been especially optimised for cryogenic storage.

Based on our experience and on tests conducted with plastic tubes, we can provide the following information:

- As a rule, temperatures below 0°C reduce the strength values of plastic materials. Therefore excessive **mechanical stress** is to be avoided.
- The freezing conditions must be selected in a way to enable the contents to freeze **evenly**, i.e. starting in the **lower part** and freezing **upwards**. If unfavourable conditions cause the tube to start freezing in the upper part, expansion cracks are likely to occur in the lower section.
- Use **suitable racks or storage boxes** enabling sufficient free play in the rack to allow them to expand. Due to their pronounced insulating properties, we cannot recommend storage in Styrofoam containers.

As the stress exerted on the tubes tends to vary significantly depending on both the medium to be frozen and the respective routine conditions, the suitability of the tubes in a temperature range below zero must be tested under **your specific conditions of application**.

These notes serve as a guideline only and do not constitute any confirmation of warranted quality.