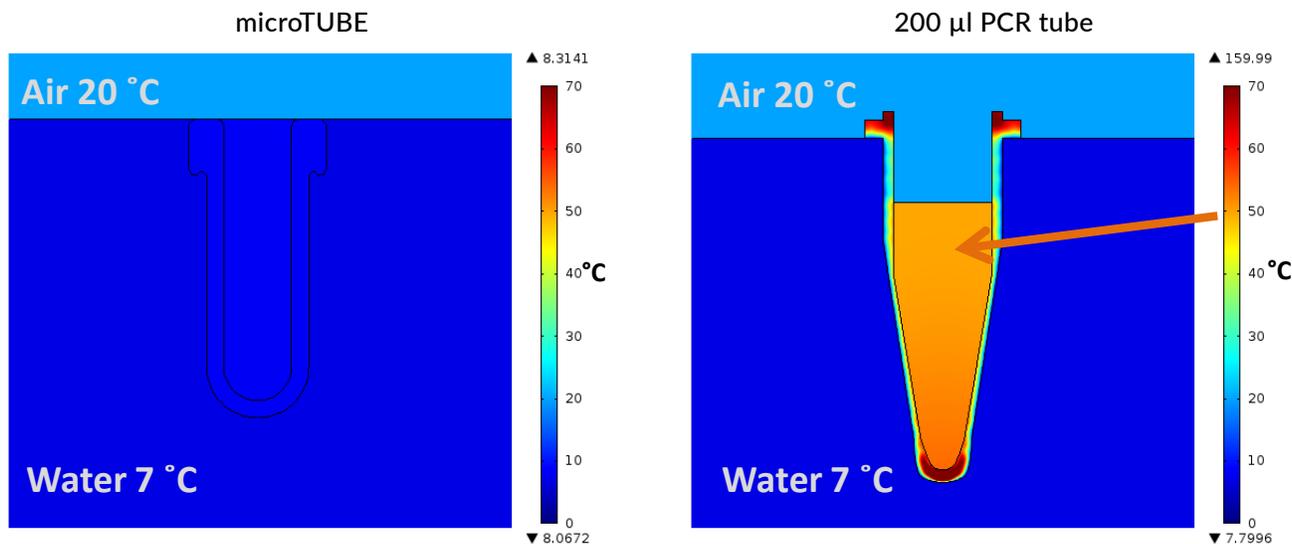


AFA® microTUBES: Engineered for Ultrasonics

Avoid Melting your DNA in Polypropylene PCR tubes

Temperature Profiles During Shearing: Engineered microTUBEs compared to PCR plates*



To achieve acceptable DNA shearing in PCR tube it is necessary to run the AFA process for a long duration at high settings (PIP 175W, 10% Duty Factor, 200 Cycles Per Burst (CPB) for 780 seconds). The data above shows the temperatures reached with these settings in a PCR tube and a Covaris microTUBE.

Heat: Covaris Adaptive Focused Acoustics® (AFA®) has proven to be effective in biological processes such as DNA shearing because heat is both minimized and effectively managed.

Low Power Input: The AFA process needs much less input energy because peak pressures are formed inside the microTUBE and around the sample and not in the whole system. DNA fragmentation is complete within only 80 seconds compared to 780 seconds in a PCR Tube.

Effective Heat Management: Any heat produced is immediately removed through the glass AFA microTUBE. Temperature inside the microTUBE changes by less than 1 °C. Polypropylene transmits heat slowly compared to glass so heat produced is retained and passes into the sample.

Engineered microTUBES: microTUBEs contain an AFA Fiber which breaks the surface tension of the sample ensuring homogeneous treatment. Glass microTUBEs dissipate energy quickly into the water bath. Polypropylene heats up when exposed to acoustic energy and with the settings for DNA shearing reaches 70 °C at the tip and an average temperature of 50 °C in the tube.

*Using Finite Element Analysis supported by empirical data Covaris maps the peak pressure and temperature of the complete AFA System with AFA microTUBES compared to, in this case, a PCR tube in the AFA acoustic field.