Insulon® Sheaths for Hypodermic Needles

Insulon® Sheaths can provide insulation for needles, probes, trocars, shafts, and tubes used in thermal ablation therapies such as cryo-, steam, and radiofrequency ablation.

Insulon® Sheaths are manufactured from medical grade 304/316 stainless steel and can be easily sterilized and incorporated into medical devices. With **less than 0.5 millimeters** in overall wall thickness, Insulon® Sheaths provide maximum insulation while preserving the minimally invasive nature of thermal ablation therapies.

Figure 1: Liquid nitrogen (-196°C) flows through an 11 gauge Insulon® Sheath. The external surface remains near ambient temperature allowing for safe contact with healthy tissue.

Risks associated with thermal ablation therapies include damage to healthy tissue outside of the targeted treatment zone.[1] Damage may include ice burn[2] or neural damage such as temporary neuropraxia (occurring at -20°C) or permanent neurological damage (below -40°C).[3] Frequent postoperative complaints include pain or paresthesia at the site of insertion.[4]

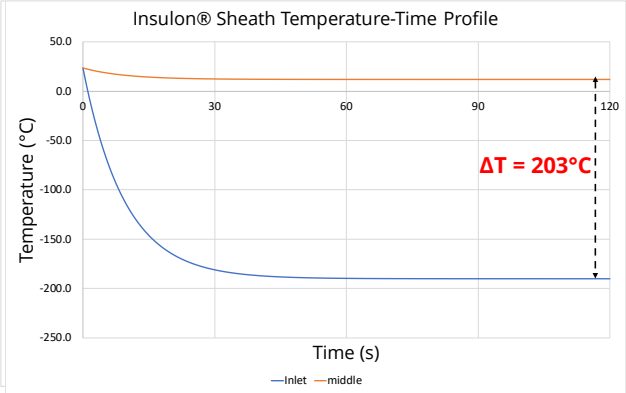

Figure 2: Temperature-time profile of a 6 inch long, 14 gauge Insulon® Sheath carrying liquid nitrogen. Skin temperature reaches steady state at 15°C.

Insulon® Sheaths can help reduce these risks and improve safety and comfort by protecting healthy tissue against exposure to dangerous temperatures (Figure 1). The external surface of a 6 inch long, 18 gauge Insulon Sheath carrying liquid nitrogen (-196°C) reaches steady state at 12°C; a 14 gauge reaches steady state at 15°C (Figure 2).

Insulon® Sheaths are manufactured in sizes as small 24 gauge and can fit inside hypodermic needles as small as 22 gauge. Both standard and custom sizes are available, and Concept Group engineers are ready to work with you to incorporate Insulon® Sheaths into your product design.

For more information, please call (516) 320-9995
or
email us at inquiries@conceptgroupllc.com.

1. World Health Organization. (2019). Cryosurgical Unit. https://www.who.int/medical_devices/innovation/cryosurgical_unit.pdf.

2. Young, Jennifer L. (2010). "Ice Burn: Protecting the Flank During Renal Cryotherapy". Journal of Endourology. 24(8). doi:10.1089/end.2009.0434.

3. Filippiadis, Dimitrios K. (2014). "Percutaneous imageguided ablation of bone and soft tissue tumours: a review of available techniques and protective measures". Insights into Imaging. 5(3): 339-346. doi: 10.1007/s13244-014-0332-6.

4. Young. (2010).