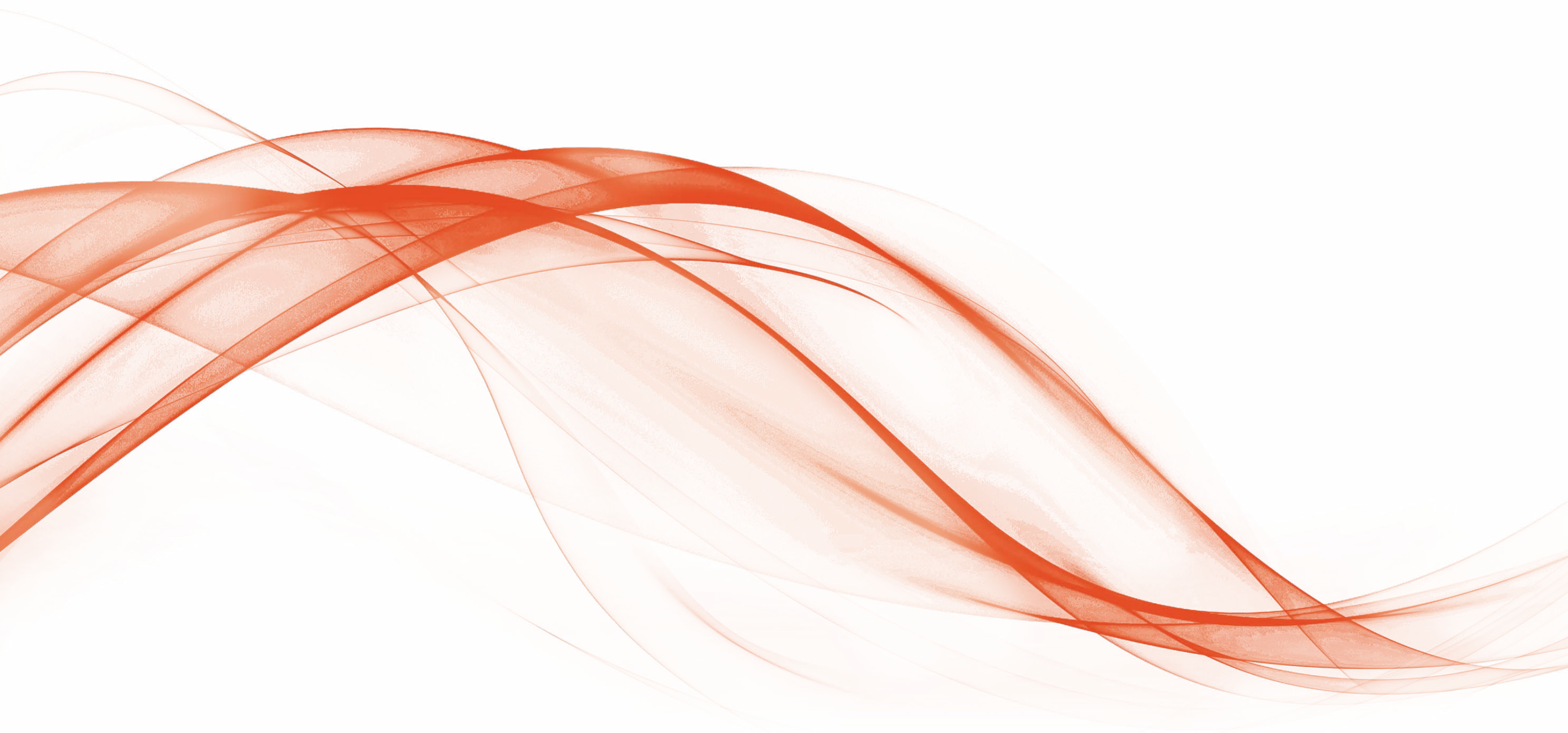


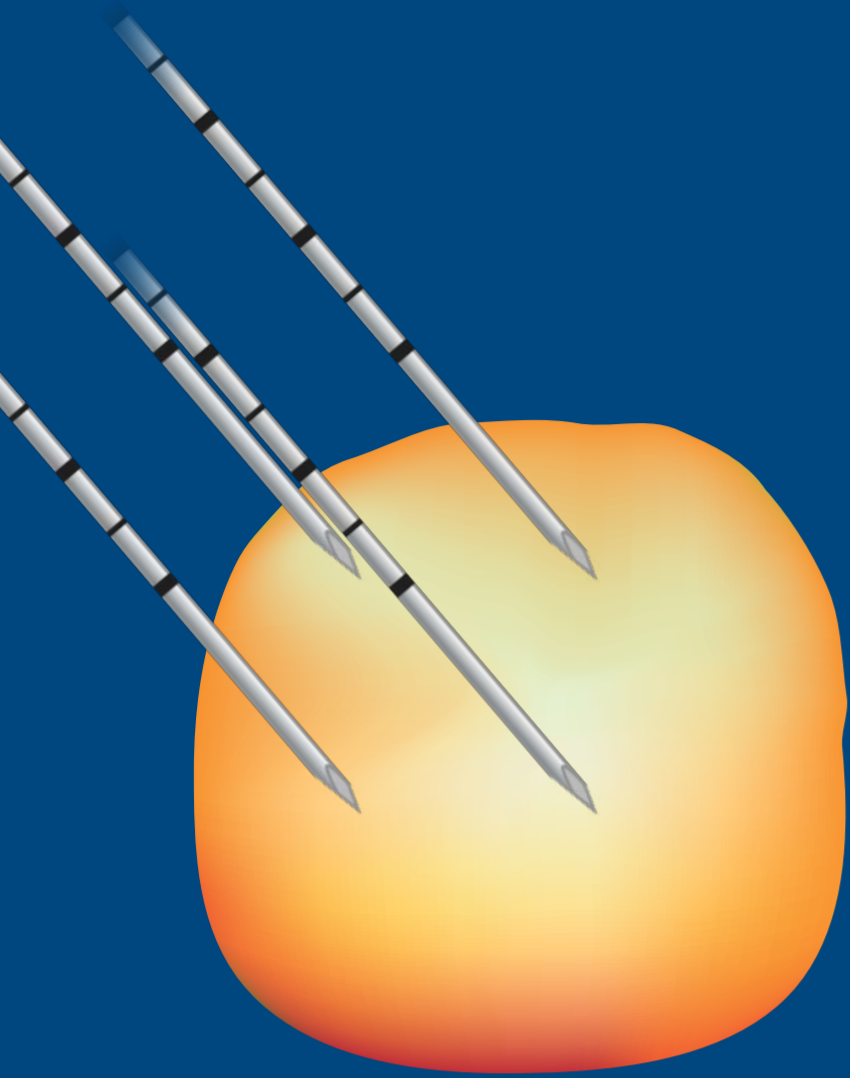


CRYOABLATION

Treatment Planning



CREATING ICE



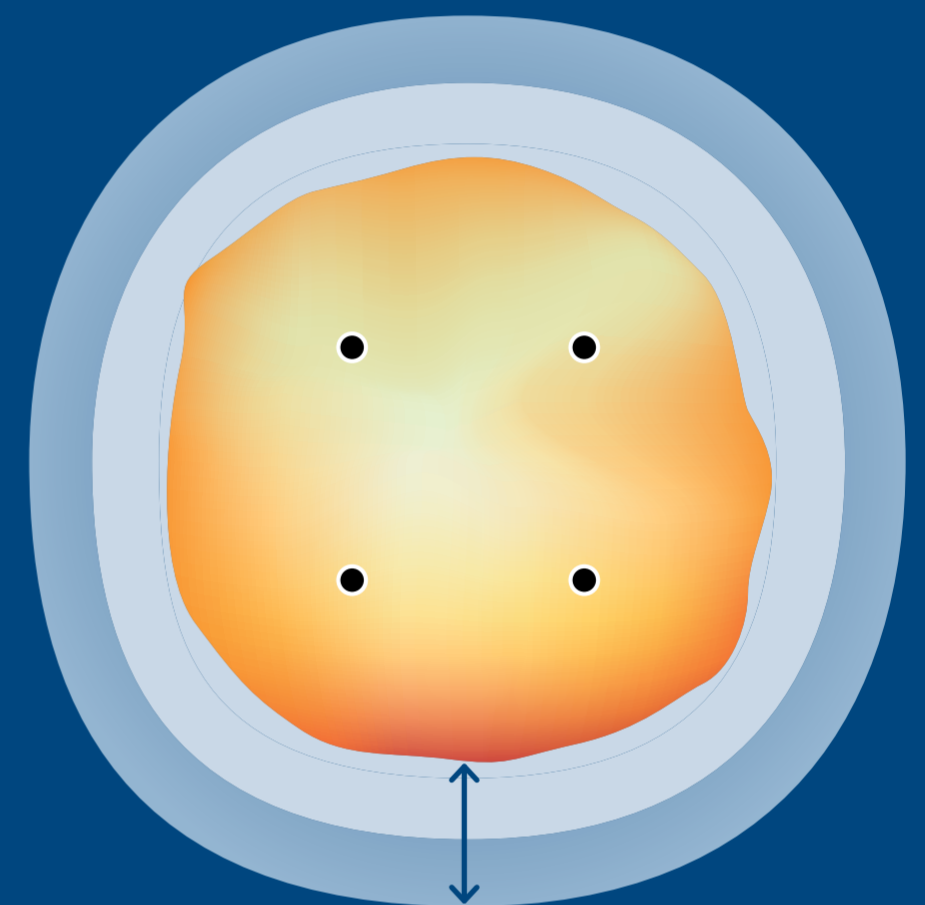
Iceball dimensions presented in this guide are provided to assist clinicians in selecting the cryoablation needle(s) and needle placement to appropriately ablate the target area. To optimize appropriate margins, needles should be placed to create lethal ice beyond the perimeter of the target tissue 5-10 mm depending on tissue type.

To optimize tumor coverage and provide appropriate margins, use of multiple needles is recommended. Multiple needles placed in an adjacent configuration will typically create a large, coalesced iceball.

In clinical use, patient anatomy, tissue and tumor properties affect needle placement. Needle type, number of needles placed, tissue and tumor characteristics, surrounding vasculature and treatment duration affect iceball size.

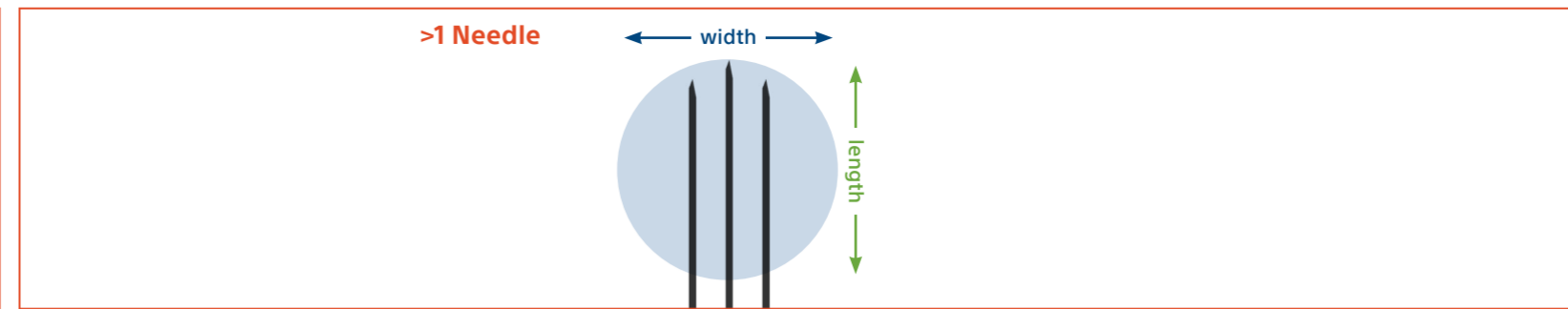
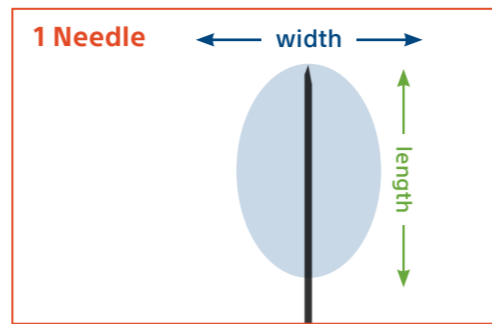
Intraoperative imaging is important to monitor iceball formation throughout the procedure and is key to a successful cryoablation.

Isotherms represented in this guide were conducted in a laboratory setting in either 37° C temperature controlled gel. Isotherm measurements were made following two 10-minute freeze cycles separated by a 5-minute passive thaw on each needle type and size.



**Extend ice 5-10 mm
beyond tumor edge**

CRYOABLATION ISOTHERM DATA 37°C



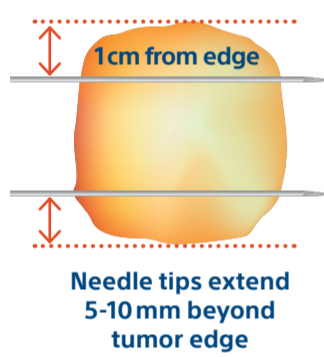
NEEDLE PLANNING GUIDE

- Choose needle type and number of needles to surround the tumor with lethal ice based on application, tumor location and tumor size

NOTE:
0°C is the visible edge of the iceball and is not lethal

- Multiple needles placed in an adjacent configuration will typically create a large, coalesced iceball

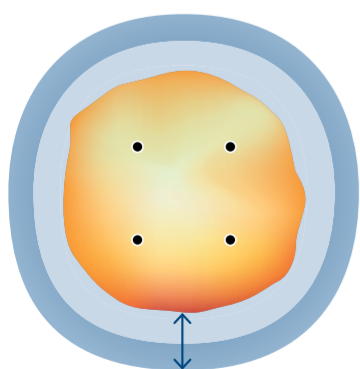
NOTE:
Needles spaced too far apart risk areas of non-lethal ice



- Place needles no further than 1cm from the tumor's edge
- Extend the needle tip beyond the distal edge of the tumor to ensure appropriate coverage with lethal ice

NOTE:
-20°C ice extends less than 5mm beyond the needle tip

- Use imaging to confirm iceball completely engulfs the tumor with a 5-10mm margin depending on tissue type



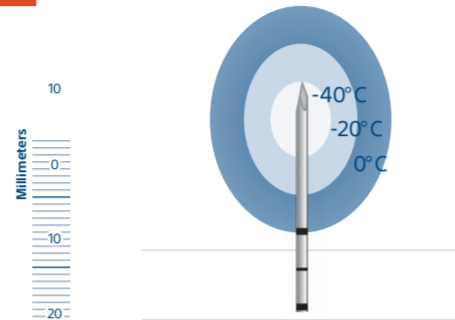
IceSeed™ 1.5 Family

Optimal spacing: 1.0cm

IceSeed™ 1.5 Straight Needle: H7493962232010
IceSeed™ 1.5 90° Needle: H7493962332020

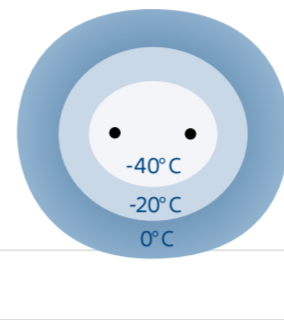
Shaft Length: 17.5 cm
Shaft Diameter: 1.5 mm / 17G

Side view width ±3 mm x length ±4 mm
Single-needle treatment

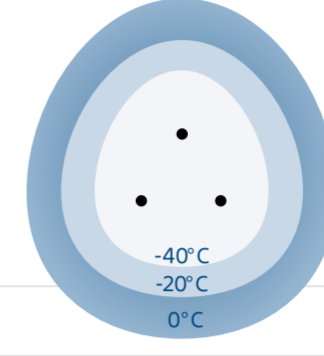


0° C 24mm x 30mm
-20° C 15mm x 20mm
-40° C 8mm x 10mm

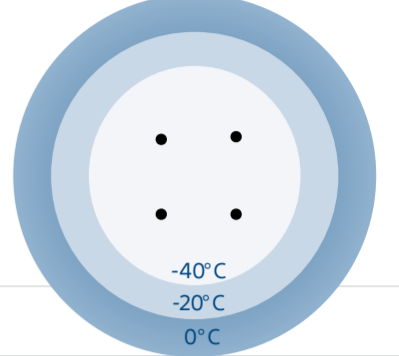
Top view/ Projection in 2D (width ±4 mm and length ±4 mm)
Multiple-needle treatment



0° C 36mm x 33mm
-20° C 25mm x 23mm
-40° C 17mm x 14mm



0° C 41mm x 45mm
-20° C 32mm x 34mm
-40° C 23mm x 26mm



0° C 48mm x 48mm
-20° C 38mm x 38mm
-40° C 28mm x 29mm

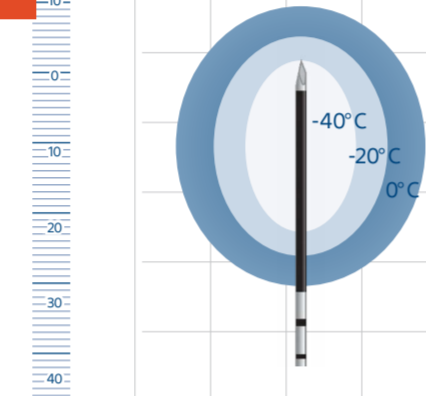
IceSphere™ 1.5 Family

Optimal spacing: 1.0–1.5cm

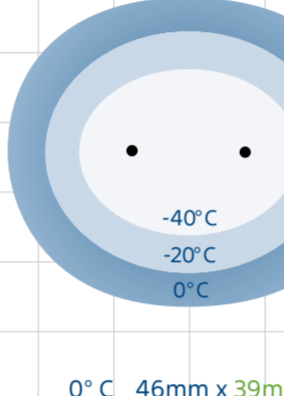
IceSphere™ 1.5 Straight Needle: H7493962535580
IceSphere™ 1.5 90° S Needle: FPRPR3560
IceSphere™ 1.5 90° Needle: H7493962735610
IceSphere™ 1.5 CX 90° Needle*: H7493961535730

*Track Ablation:
Radial width 2.1–2.5 mm; Length 14 mm

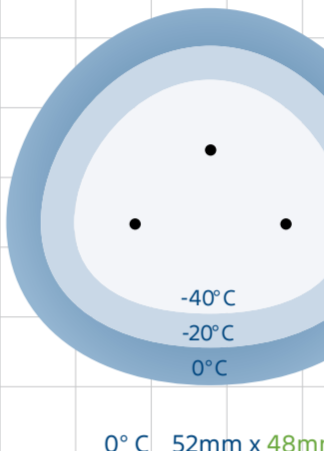
Shaft Length: 510 cm / 17.5 cm
Shaft Diameter: 1.5 mm / 17 G



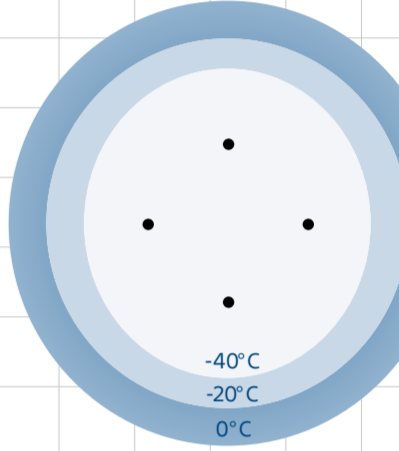
0° C 31mm x 36mm
-20° C 22mm x 28mm
-40° C 13mm x 23mm



0° C 46mm x 39mm
-20° C 36mm x 29mm
-40° C 26mm x 19mm



0° C 52mm x 48mm
-20° C 43mm x 37mm
-40° C 34mm x 28mm



0° C 55mm x 58mm
-20° C 45mm x 47mm
-40° C 36mm x 39mm

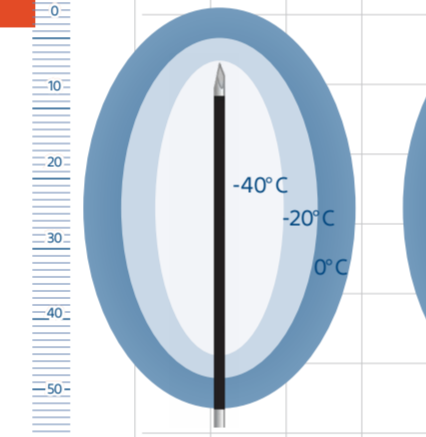
IceRod™ 1.5 CX Family

Optimal spacing: 1.0–1.5cm

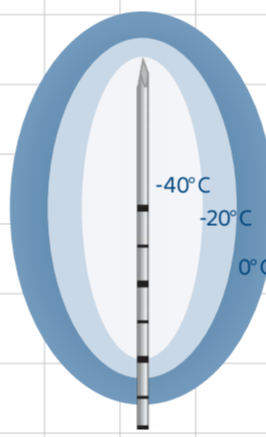
IceRod™ 1.5 PLUS 90° Needle: FPRPR3508
IceRod™ 1.5 iThaw Needle: FPRPR4009
IceRod™ 1.5 90° CX Needle*: H7493961435330

*Track Ablation:
Radial width 2.3 mm; Length 30 mm

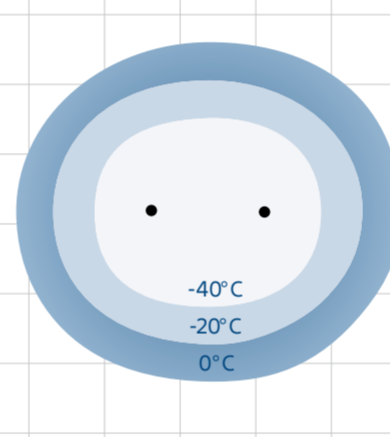
Shaft Length: 17.5 cm
Shaft Diameter: 1.5 mm / 17 G



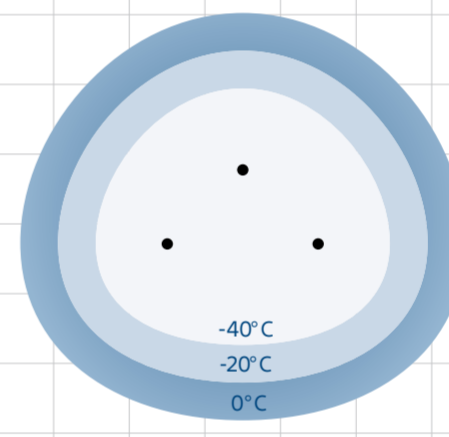
IceRod™ 1.5 CX
0° C 36mm x 53mm
-20° C 26mm x 45mm
-40° C 16mm x 39mm



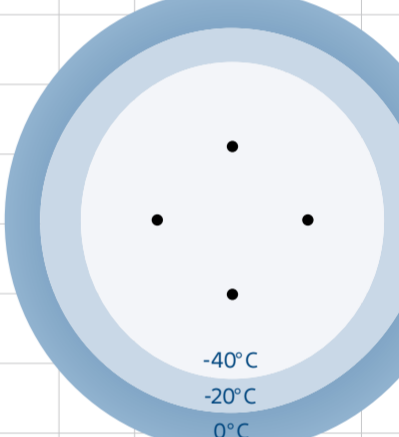
IceRod™ 1.5 PLUS
0° C 34mm x 55mm
-20° C 25mm x 45mm
-40° C 16mm x 40mm



0° C 50mm x 44mm
-20° C 39mm x 34mm
-40° C 29mm x 24mm



0° C 59mm x 53mm
-20° C 49mm x 43mm
-40° C 39mm x 33mm



0° C 60mm x 61mm
-20° C 51mm x 51mm
-40° C 40mm x 42mm

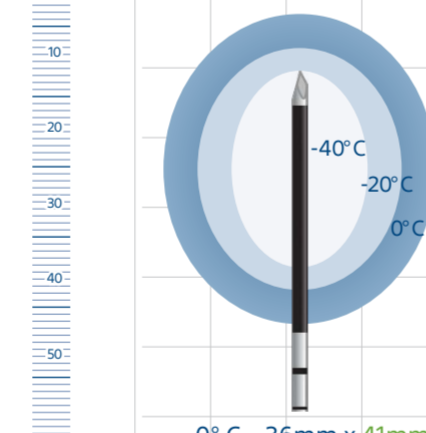
IcePearl™ 2.1 CX Family

Optimal spacing: 1.0–1.5cm

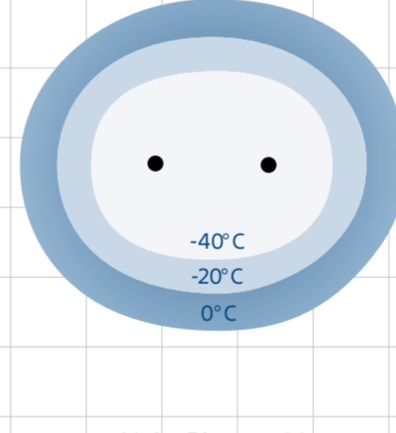
IcePearl™ 2.1 CX Straight Needle*: H7493961836030
IcePearl™ 2.1 CX 90° Needle*: H7493961636010
IcePearl™ 2.1 CX L 90° Needle*: H7493962036170

*Track Ablation:
Radial width 2.1 mm; Length 13 mm

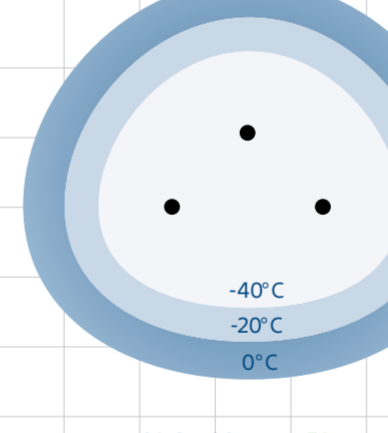
Shaft Length: 17.5 cm / L23 cm
Shaft Diameter: 2.1 mm / 14 G



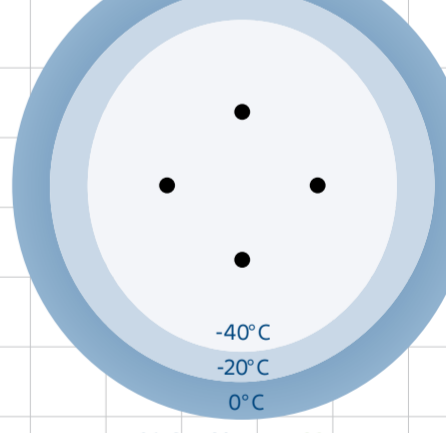
0° C 36mm x 41mm
-20° C 27mm x 32mm
-40° C 18mm x 26mm



0° C 51mm x 44mm
-20° C 41mm x 34mm
-40° C 32mm x 25mm



0° C 60mm x 53mm
-20° C 49mm x 43mm
-40° C 40mm x 34mm



0° C 61mm x 62mm
-20° C 51mm x 52mm
-40° C 41mm x 44mm

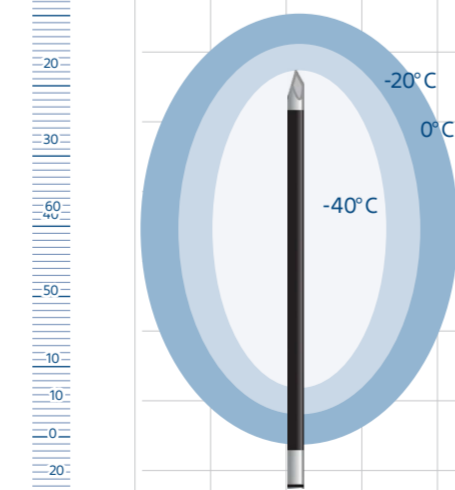
IceFORCE™ 2.1 CX Family

Optimal spacing: 1.5–2.0cm

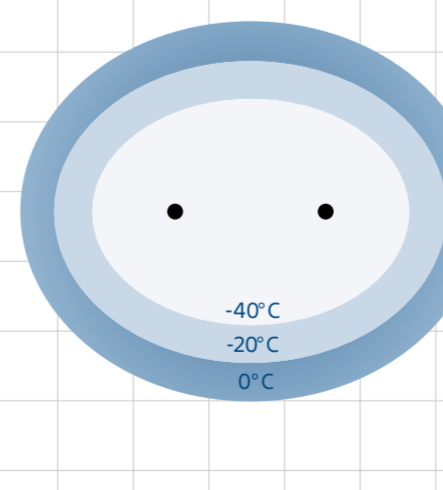
IceFORCE™ 2.1 CX Straight Needle*: H7493961936040
IceFORCE™ 2.1 CX 90° Needle*: H7493961736020
IceFORCE™ 2.1 CX L 90° Needle*: H7493962136180

*Track Ablation:
Radial width 2.5 mm; Length 29 mm

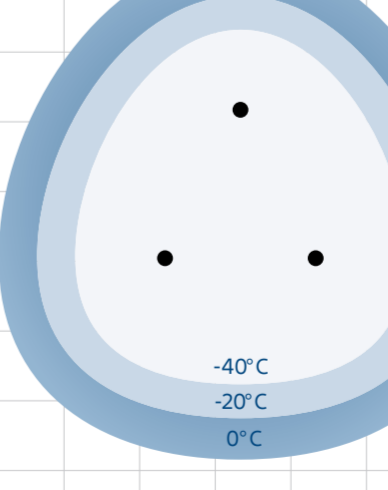
Shaft Length: 17.5 cm / L23 cm
Shaft Diameter: 2.1 mm / 14 G



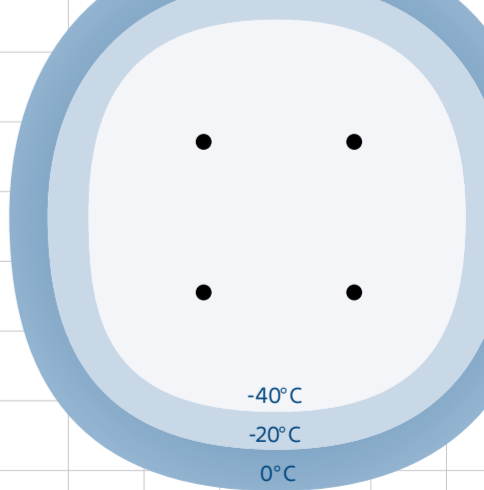
0° C 42mm x 57mm
-20° C 32mm x 49mm
-40° C 23mm x 42mm



0° C 61mm x 50mm
-20° C 52mm x 40mm
-40° C 42mm x 30mm



0° C 64mm x 67mm
-20° C 54mm x 56mm
-40° C 44mm x 47mm



0° C 71mm x 73mm
-20° C 61mm x 62mm
-40° C 50mm x 52mm

ORDERING INFORMATION

CRYOABLATION PORTFOLIO OF NEEDLES

The following chart lists 90° and straight needles.

Please contact your representative or customer service for

MRI compatible needles, needle kits and cryoablation systems.

Cryoablation Needles	REF	Shaft Length / Gauge	Track Ablation Radial Width / Length
IceSeed™ 1.5 90°	H7493962332020	17.5 cm / 17 G	
IceSeed™ 1.5 Straight	H7493962232010	17.5 cm / 17 G	
IceSphere™ 1.5 90°	FPRPR3560	17.5 cm / 17 G	
IceSphere™ 1.5 S 90°	H7493962735610	10 cm / 17 G	
IceSphere™ 1.5 CX 90°	H7493961535730	17.5 cm / 17 G	1.7 mm / 14 mm
IceSphere™ 1.5 Straight	H7493962535580	17.5 cm / 17 G	
IceRod™ 1.5 PLUS 90°	FPRPR3508	17.5 cm / 17 G	
IceRod™ 1.5 CX 90°	H7493961435330	17.5 cm / 17 G	2.3 mm / 30 mm
IceRod™ 1.5 i-Thaw® Straight	H7493964940090	17.5 cm / 17 G	
IcePearl™ 2.1 CX 90°	H7493961636010	17.5 cm / 14 G	2.1 mm / 13 mm
IcePearl™ 2.1 CX L 90°	H7493962036170	23 cm / 14 G	2.1 mm / 13 mm
IcePearl™ 2.1 CX Straight	H7493961836030	17.5 cm / 14 G	2.1 mm / 13 mm
IceFORCE™ 2.1 CX 90°	H7493961736020	17.5 cm / 14 G	2.5 mm / 29 mm
IceFORCE™ 2.1 CX L 90°	H7493962136180	23 cm / 14 G	2.5 mm / 29 mm
IceFORCE™ 2.1 CX Straight	H7493961936040	17.5 cm / 14 G	2.5 mm / 29 mm

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