Transmural lesions made with cryo technology require a temperature low enough to induce irreversible cell destruction. 

COLDER WITH ARGON.
CREATE DEEP, EXTENSIVE LESIONS.

Tissue that is frozen to temperatures below -40°C is destroyed by direct damage in a single ablation.⁴

Levels of Cell Death

- Tissue temperatures below -40°C are lethal.⁴-⁷
- Tissue temperatures of -20°C to -40°C are lethal when ablation is repeated⁴ or held frozen for an extended period.⁵
- Tissue temperatures of 0°C to -20°C are not completely lethal and cells may survive.⁴,⁵
- Tissue temperatures below 0°C to -20°C are lethal when held frozen⁴ or over repeated⁴ freeze-thaw cycles.
- Temperature is sufficiently low to destroy tissue in a single cycle.⁴
- Incomplete destruction and cell survival.⁴,⁵

Argon-based Probe Temperature -150°C
Achieve lethal temperatures with argon.

Surgical ablation systems powered by argon gas freeze tissues to temperatures colder than -40° C in under two minutes in 4, 6, and 8 mm tissue thicknesses.

Argon-based Surgical Ablation System vs. Nitrous Oxide-based Surgical Ablation System Comparison†

†In vitro comparison of argon-based and nitrous oxide-based surgical ablation systems by thermocouple embedded in porcine tissue of 4-8 mm thickness, over two minutes total time. Medtronic data on file. Results may not be indicative of clinical performance.
REFERENCES

IMPORTANT SAFETY INFORMATION
CryoFlex™ Surgical Ablation System
Indications for Use: The Cardioblate CryoFlex Surgical Ablation System is intended for minimally invasive cardiac surgical procedures, including the treatment of cardiac arrhythmias. The Cardioblate CryoFlex 7-cm, 10-cm, and 10-S probes plus the Surgical Ablation Console freeze target tissue and block the electrical conduction pathways by creating an inflammatory response and cryonecrosis.

Contraindications: The CryoFlex Surgical Ablation Probe is not designed for use inside a beating heart.

Adverse Effects: Potential adverse effects with this device are similar to other cardiac surgery procedures and may include the following: bleeding; reoperation; extension of extracorporeal bypass; heart rhythm disturbances (atrial and/or ventricular); pericardial effusion; pericarditis; cardiac tamponade; pleural effusion; mediastinitis; conduction disturbances (SA/AV node); acute ischemic myocardial event; thrombus formation; low cardiac output; stroke; renal, gastrointestinal or respiratory complications; sepsis; adjacent structural damage; and death.

Cryoablation involving coronary vessels has been associated with subsequent clinically significant arterial stenosis. It is unknown whether cryoablation with the CryoFlex Surgical Ablation Probe will have such an effect, but as in all such procedures, care should be taken to minimize unnecessary contact with coronary vessels during cryoablation.

Caution: Federal law (USA) restricts this device to sale by or on the order of a physician. For a listing of indications, contraindications, precautions, and warnings, please refer to the Instructions for Use.

For more information, contact your local Medtronic Surgical Ablation Representative.
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