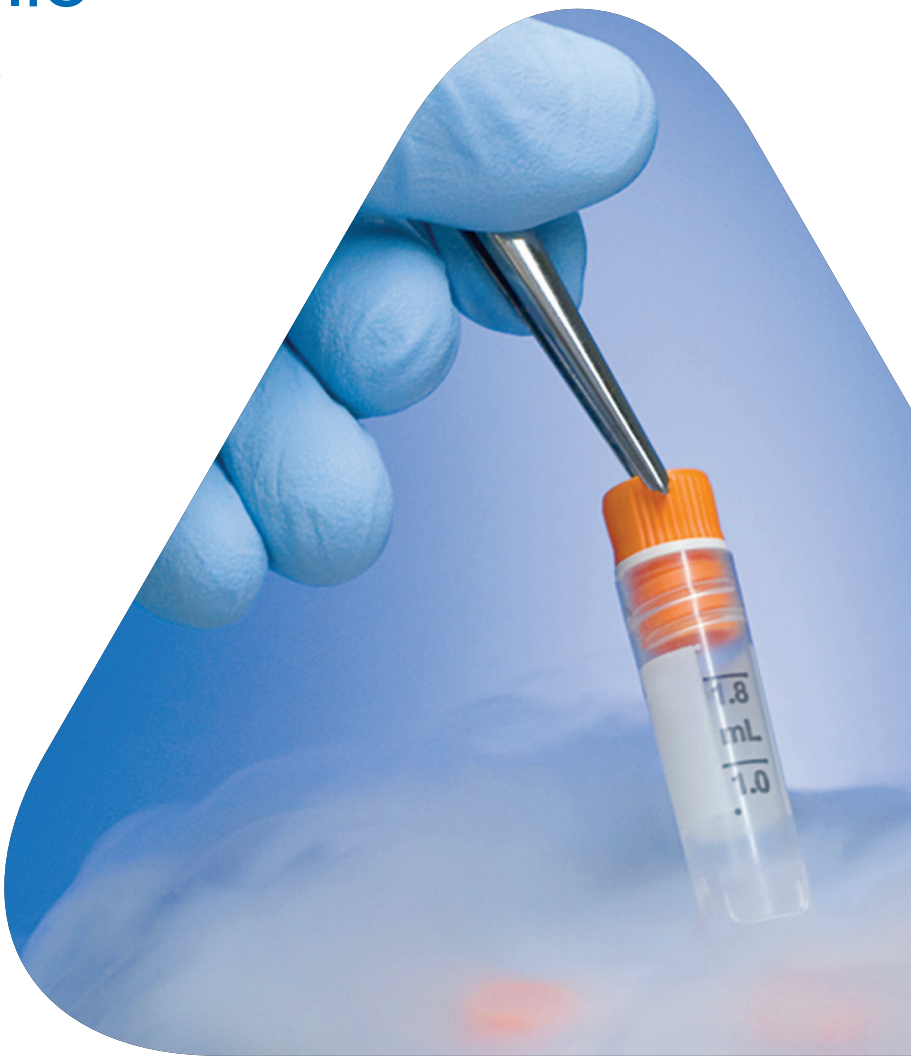
Cold chain and Cryogenic Portfolio

Ensure High Performance at Ultra-low Temperatures



Why Ultra-low temperature labels?

The durability of labeling materials in cold temperatures is of utmost importance for biological and pharmaceutical products such as vaccines, biologic drugs, blood, stem cells, and whole tissues that are preserved by cooling to low sub-zero temperatures, as low as -196°C (the boiling point of liquid nitrogen). At temperatures below -130°C, biological activity ceases and therefore storage at these temperatures is necessary to preserve the product in a stable environment. It is imperative that not only these products, but the labels that identify them for potentially life-saving and life-creating medical applications, do not deteriorate. Avery Dennison materials for cryogenic applications were designed for applications ranging from room temperature to storage in liquid nitrogen and harsh deep-freeze environments. They can be applied to plastic and glass containers, tubes, and vials, as well as aluminum canisters and other challenging surfaces.

Definitions

Cryo preservation: refers to liquid nitrogen conditions (-196C° /-320F°) necessary for storage of biological constructions such as cells or tissues.

Dry Ice: refers to frozen carbon dioxide (-78C°/-109F°) used for freezing and keeping things frozen required for exampel in clinical trials.

Freezing: referst to negative temperatures up to dry ice conditions needed for products that need to be kept stable in the very cold conditions like plasma or various lab samples.

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Product Information

Key Benefits

- Clear identification of biological drugs, bio-banking products and blood components
- Reduced risk of potentially catastrophic mixups due to label displacement during transportation
- Unobstructed view of products in transparent packaging (with clear film)
- Ultimate product protection throughout the supply chain, from manufacturer to retailer, medical facility and patient

Key Features

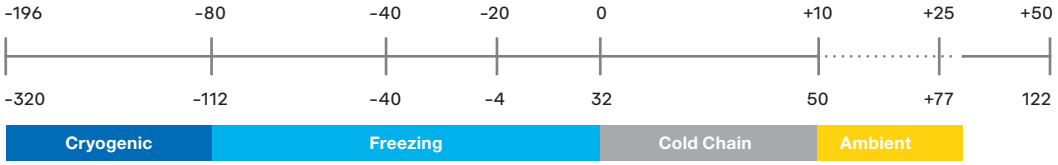
- Good adhesion to substrates including polypropylene, glass, PVC and steel
- Compatibility with a variety of different printing methods such as UV flexo and thermal transfer
- Clear and white film facestocks available
- Excellent conformability for tight mandrel situations
- Ability to withstand multiple freeze-thaw cycles

Applications

Pharmaceutical
- Vaccines
- Drugs
- Injectables

Bio-Banking
- Blood products
- Serum
- Reproductive tissue storage
- Stem cells
- Cell and tissue freezing
- Tissue culture
- DNA and RNA
- Cord blood and stem cells

Low temperature Pharma segments



	Cryogenic	Freezing		Cold Chain	Ambient
Application	Tissues, Sperm, Organs.	Clinical Trials, Dry ice	Plasma, Lab labels	Injectables: Vaccine, Biologics	Oral Medicine
Adhesives	Cryo Range C0196	C0196/AT20N	AT1B, AT20N,FDA815S	Cold Chain: Moist surface	Ethical & OTC Range
Key Substrates	HDPE/Corrugated Box	HDPE/Glass	HDPE/Glass	HDPE/Glass	See portfolio overview

Spec#	Product Description	Service Temperature	Application Temperature	Autoclave Sterilization	TT Printability	Width/Length (IN./FT.)	Location	Lead Time
77392	2.3 Mil White Polypropylene TC/C0196/40#BG	-320° F	-20°F	Yes	Yes	59/1668	NEE	1 Day
73122	1.5 Mil Clear PRT PET/S730A/ 1.5 Mil PET	> -40°C (-40°F)	+45°F	Yes	Yes	54/4630	PVL	5 Days

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