

PolarFit[®] cryogenic cooling conveyor



Foam-insulated conveyor

A cryogenic cooling conveyor is an ideal way to pre-cool and feed material, such as plastics; pharmaceuticals; food; or biomass, like industrial hemp*, into a grinding mill or other operation. Using a cooling conveyor with cryogenic liquid (nitrogen or carbon dioxide) to achieve embrittlement can result in improved quality or consistently higher yields of particles in your target size range and, ultimately, reduced operating costs. A cooling conveyor can also be used to freeze or pre-cool material like biomass to cryogenic temperatures before it enters the next unit operation, such as extraction. Choosing the right cooling conveyor for the job is critical. The correct size and type of conveyor translates to improved efficiency and lower costs. We can help make your choice easier – Air Products offers a selection of cooling conveyors backed by our experience to help maximize your performance.

Air Products' PolarFit cryogenic cooling conveyors spray liquid cryogen onto the material as it moves along the conveyor, from the hopper to the grinding mill, to help you efficiently maintain the desired cold temperature. This process results in a high heat-transfer coefficient on the pellet or material surface. This rapid cooling makes the material brittle and more easily crushed by a variety of impact-type mills and can help you improve efficiency and product quality. Our systems can also be used to pre-cool materials such as industrial hemp biomass to cryogenic temperatures, as cold as -148°F (-100°C). Safe use of liquid nitrogen or carbon dioxide to aid in process temperature control can be a fast, precise, flexible and economic solution to help with challenging processing requirements.



Vacuum-insulated conveyor

Solutions to meet your needs

Whether you're looking for a complete cryogenic fine grinding system or want to enhance your current mill's performance by adding a cooling conveyor, Air Products has the hardware and knowledge to help you with the optimal solution to achieve the results you're looking for. We offer two conveyor configurations—rectangular foam-insulated and cylindrical vacuum-insulated—in various sizes to meet your operational and performance requirements.

Foam-insulated cooling conveyor for efficient, frequent product changes

Our foam-insulated cooling conveyor is ideal for applications that require frequent material changes. Its enclosure opens and closes easily for efficient cleaning, and the rectangular design provides a small installed footprint. Additional features and benefits:

- E-Z hinge design features hassle-free screw removal for cleanup and material change
- Multiple locations for thermocouples increase installation flexibility
- Hinged front door allows rapid warm-up
- Adjustable spray bar allows different liquid nitrogen flow rates
- Efficient operation optimizes liquid nitrogen efficiency
- Available in 2-ft. (610 mm) and 7-ft. (2135 mm) lengths

Vacuum-insulated cooling conveyor for lower operating costs

Our vacuum-insulated cylindrical conveyor is designed for maximum operating efficiency. The ability to spray from single or multiple injection nozzles increases flexibility for a wide range of materials and applications, and the conveyor's shallow flight design ensures even material exposure to the cooling liquid cryogen for optimum heat exchange.

Additional features and benefits:

- Preplumbing for co-current or counter-current removal of cold heat-exchanged gas provides greater versatility to suit your application
- Variable flight design permits mixing of the feed solids
- Easy installation/removal of screw allows for fast changeover and easy cleaning

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The Air Products advantage

When you rely on Air Products for a solution to your grinding requirements, you gain access to the decades of experience in operations, cryogenic freezing and cooling that you would expect from a world leader in cryogenic grinding.

At our trial facilities around the world, we can run your product on production-scale equipment to help determine the feasibility of using cryogenics in your process.

Our applications engineers can help match the right system with your grinding specifications. We offer complete turnkey systems that includes mills, cooling conveyors and cryogenic equipment and supply or individual components.

* Sales will only be made to customers that are compliant with applicable state and federal regulations.

