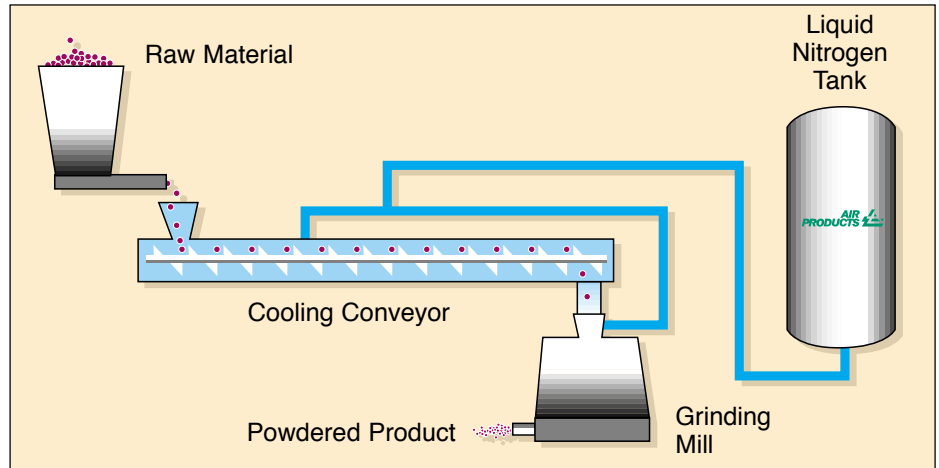


## *Cryo-Grind Size Reduction Systems*

### *For fine grinding plastics and pigments*



Air Products' Cryo-Grind systems perform three essential tasks in the efficient particle size reduction of all types of plastics and pigments:

#### *Cryogenic grinding*

Grinding tough, thermoplastic materials – polypropylene, nylon, powder coatings etc. – at cryogenic temperatures ensures that plastics are brittle enough to be ground below 300 micron particle size: and even down to 50 micron and below with the improved new Cryo-Grind systems.

#### *Temperature control*

Materials normally brittle enough to grind at ambient temperatures can start to degrade when the ambient temperature rises i.e in summer, during processing or if throughput increases are required. Cryo-Grind systems inject controlled amounts of liquid nitrogen to regulate the heat of the grinding process and allow higher material throughputs at any time of the year.

#### *Inert grinding*

Organic materials (especially pigments) have an increased risk of explosion when very fine particles combine with air and the heat of the grinding mill. The use of nitrogen to make the atmosphere inert reduces the possibility of this occurrence.

The Cryo-Grind process is not new, but the improvements made by Air Products – working in conjunction with grinding mill manufacturers all over the world – mean that the nitrogen ratios and particle size distribution are now better than ever.

#### *Advantages*

- **Smaller particles**  
Plastics and pigments can be introduced into high performance materials with improved mixing and better final material quality
- **More uniform particle size distribution**  
Cryogenically ground materials have a narrower, more consistent size distribution and unproved surface characteristics
- **Efficient process**  
Nitrogen usage is minimised and throughput maximised by using Air Products' Cryo-Grind systems
- **Process cooling/temperature control**  
Higher throughputs (even in summer) and no material degradation
- **Inertness**  
Prevention of dust explosions using an inert nitrogen atmosphere
- **Trial facilities**  
Call your local Air Products representative to find out about Air Products' trial and demonstration facilities appropriate to your application.

### Cryo-Grind system cooling conveyors



*Foam-insulated cooling conveyor  
– ideal for applications that require frequent material changes*



*Vacuum-insulated cooling conveyor  
– this cylindrical conveyor is designed for maximum operating efficiency*

### Overview of the vacuum-insulated cooling conveyors

Type	Screw Dia. (inner) [mm]	Outer Dia. [mm]	Overall Length [mm]	Mid. Inlet Outlet [mm]	Height (Flange) Inlet-Outlet [mm]	Approx. Weight (Incl. Frame) [kg]
E-100	100	219	4000	3000	600	270
E-150	150	256	4000	3000	600	300
E-300	300	406	4000	3000	600	400
E-300XL	300	406	7000	6000 (max.)	700	650

**Utility Requirements:**

Electrical motor: between 1.1 and 3 kW, 400V, 3 phase

Instrumentation: 220V single phase

Instrument air: (GAN) 6 bar

### About Air Products

Air Products is a leading international gases and chemicals group, with turnover of approximately \$10 billion and operations in over 40 countries worldwide. We have more than 60 years' cryogenics experience and three decades of research data on cryogenic grinding techniques.

### State-of-the-art systems

The Cryo-Grind systems have been developed using the expertise of Air Products' in-house cryogenic grinding research facilities, together with those of our associates, the grinding mill manufacturers, to provide the optimum size reduction solution.

**tell me more**  
**[www.airproducts.com/cryogenics](http://www.airproducts.com/cryogenics)**

### The next step

For more information on Cryo-Grind technology and details about demonstrations, please contact your local Air Products office.

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