

PolarFit™

Ultra-Fine-Grinding Mill



Ultra-fine grinding is no small task. Air Products can help you break things down.

While grinding applications may differ, the desired end result is often the same—achieving the finest particle size and the most uniform particle distribution while maximizing production rates and minimizing overall operational costs. Air Products can help you make it happen.

A cost-effective way to achieve ultra-fine particles

As part of our commitment to bringing you leading-edge technology, we offer our PolarFit ultra-fine-grinding mill. This versatile grinding system provides a cost-effective way to reduce hard-to-grind materials to smaller particle sizes than can be achieved with conventional impact mills. The mill generates consistent yields of particles between 45 and 250 microns or between 60 and 325 mesh. In some cases it can produce particles as small as 10 microns.

Available globally, the mill is ideal for cryogenic size reduction of a wide range of materials, including:

- Nutraceuticals
- Pharmaceuticals
- Pigments
- Plastics
- Powder coatings
- Spices and other food products
- Thermoplastic elastomers
- Waxes

Multiple impact mechanisms for maximum performance

What makes this mill unique? It uses a combination of size reduction mechanisms, including impact, attrition and particle–particle collision, to achieve much smaller particle sizes than other mills. In addition, the mill has an easily

adjustable grinding gap, which allows you to produce particle sizes from ultra-fine to coarse. This eliminates the need for other types of grinding equipment and enables you to easily vary particle size and production rates, improving your overall flexibility and efficiency.

Also, the mill is designed to be durable and easy to maintain:

- Interchangeable, precision grinding tools for extended wear time
- A grinding baffle engineered of highly wear-resistant material for improved durability
- Oil-lubricated bearings as part of the standard assembly for greater reliability when operated at high or low temperatures
- A hydraulic mill opening to allow easy maintenance and reduce cleaning time



Our ultra-fine-grinding technology can help you meet product specifications previously considered impossible.

The PolarFit ultra-fine-grinding mill is available in a range of sizes to meet your needs

Model		100	200	400	800	1200	1600
Scale-up factor		0.25	1.0	2.5	6	8.8	13
Median rotor diameter	in	4	8	16	32	48	64
	mm	100	200	400	800	1200	1600
Speed	rpm	22,000	12,000	6,000	3,000	2,000	1,500
Drive motor	hp	4–7	15–25	40–60	75–120	150–215	215–375
	kW	3–5	11–18.5	30–45	55–90	110–160	160–280
Air flow	cfm	108	480	1,080	2,460	4,200	6,000
	m ³ /hr	180	800	1,800	3,600	7,000	10,000
Weight	lb	660	1,025	3,300	9,900	18,700	27,500
	kg	300	465	1,500	4,500	8,500	12,500

The added power of liquid nitrogen

Our ultra-fine-grinding system uses the cooling power of liquid nitrogen to remove heat produced in the grinding process by controlling the temperature of your product or the mill. Key benefits include the following:

- Ultra-fine particle size
- More uniform particle distribution
- Higher yields of particles in your target range
- Improved product quality due to minimal or no heat damage
- Less recycling and lower production costs

Because of the mill's higher efficiency, these results are achieved with a lower nitrogen-to-product ratio than can be achieved with other mills, further reducing your operating costs.

Air Products offers a turnkey skid-mounted cryogenic system. Individual system components are also available. Our experienced engineers can help determine which size reduction system configuration is best for your operation based on your current system, the material you process and your goals.



Our mill's easily adjustable grinding gap provides flexibility in particle size.

The Air Products advantage

When you choose Air Products to meet your fine-grinding needs, you gain access to over 40 years of experience in applying cryogenics to grinding applications. As a leader in cryogenic applications, we offer complete technical service from our experienced staff and fully equipped facilities, from feasibility and design through start-up and ongoing service. We can test your product using the ultra-fine-grinding mill at state-of-the-art trial facilities in Asia, Europe and the United States to help determine the feasibility and benefits.

tell me more

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