

# DRY SORBENT GRINDING MILLS



**HOW TO REDUCE  
SORBENT USAGE WITH  
KEMUTEC FINE GRINDING MILLS**

# How to Reduce Sorbent Usage with Kemutec Fine Grinding Mills



Kek Universal Mill

The use of injecting Dry Sorbents into Flue Gases to control  $\text{SO}_2$ ,  $\text{SO}_3$ , HCL and Mercury emissions from Utility, Industrial and Institutional Boilers is a well-established practice. As a more economical option to alternative emission clean-up methods such as Wet Scrubbing, the benefits are well documented.

However the performance of typical Sorbents such as Trona and Sodium Bicarbonate can be limited by the effective surface area of the particles as provided by the suppliers of the Sorbent. Increasing the surface area of the Sorbent particles through dry grinding or milling provides users with an opportunity to reduce Sorbent usage and save money.

## How is this accomplished

The Sorbent is ground finer by passing it through a high-energy impact mill, where the high speed of the grinding media, such as pins, bars and turbines, grind the powder on a continuous basis.

## Kemutec Offers Two Mills for Sorbent Grinding

- **Kek Universal Mills -**

A one-pass, high energy mill, typically used for most Trona applications and less fine Sodium Bicarbonate.

- **PPS Air Classifier Mills -**

High energy mills with an integral classifier which provides a more controlled and finer grind. Typically used for the ultra-fine grinding of Sodium Bicarbonate.



PPS Air Classifier Mill

## Advantages

- Reduced particle size
- With corresponding increased surface area

## Benefits

- Decreased Sorbent consumption
- Significantly reduced Sorbent costs

# Kek Universal Mills For Fine Grinding of Trona and Sodium Bicarbonate

Kek Universal Mills are one-pass, high energy impact Mills, where incoming particles of Sorbent are 'hit' multiple times at high speed by the grinding media in order to break them into smaller particles, before exiting the grinding chamber and leaving the mill to be conveyed to the process area.

Benefiting from different types of interchangeable grinding media, the Kek Universal Mill is customizable to be able to deliver variable performance capabilities to suit individual customer requirements.

Typical Grinding Media

- Pinned Disc
- Turbine & Screen

In addition, Kek Universal Mills can be installed either as stand-alone Milling Systems or Inline directly in a Pneumatic Conveying System.

## Kek Universal Mill Typical Size & Performance Data

	Average Particle Size (D50)	Typical Surface Area	Area Increase Factor
<b>Trona</b>			
Typical Unmilled	35 to 45 $\mu\text{m}$	.035 to .045m <sup>2</sup> /g	1.67 to 2.7
Typical Milled	13 to 25 $\mu\text{m}$	0.75 to 1.15m <sup>2</sup> /gm	
<b>Sodium Bicarbonate</b>			
Typical Unmilled	70 to 150 $\mu\text{m}$	0.09 to 0.17 m <sup>2</sup> /gm	4.1 to 10
Typical Milled	15 to 25 $\mu\text{m}$	0.7 to 0.9 m <sup>2</sup> /gm	

\*Throughput Range - 500lb/hr to 15,000 lb/hr.



# PPS Air Classifier Mills For Ultra-fine Grinding of Sodium Bicarbonate

PPS Air Classifier Mills are high energy impact Mills with a built-in Classifier to control the milled particle size. Incoming particles of Sorbent are 'hit' at high speed by the grinding media in order to break them into smaller particles, before being 'checked' for size by the Classifier. Oversize particles are recycled back to the grinding chamber for further grinding. Milled particles of the correct size range exit the grinding chamber and leave the mill to be transferred to the process area.

The PPS Air Classifier Mill is generally used to grind Sodium Bicarbonate where the normal requirement is to maximize it's effectiveness by grinding the Sorbent a lot finer than other types.

## PPS Air Classifier Mill Typical Size & Performance Data

	Average Particle Size (D50)	Typical Surface Area	Area Increase Factor
<b>Sodium Bicarbonate</b>			
Typical Unmilled	70 to 150 $\mu\text{m}$	0.09 to 0.17 m <sup>2</sup> /gm	5.3 to 13
Typical Milled	<10 to 15 $\mu\text{m}$	0.9 to 1.5 m <sup>2</sup> /gm	

\*Throughput Range - 200lb/hr to 20,000 lb/hr.



PPS Air Classifier Mill Grinding Media

\*Throughput is dependant on fineness of milled powder



# Put Us to the Test

Let us prove to you how you can save money on your Sorbent usage by witnessing grinding trials in our Technology Center.

Based in Bristol, PA we can test grind Trona and Sodium Bicarbonate in both Kek Universal Mills and PPS Air Classifier Mills.

Important particle size analysis is then undertaken on a Malvern Laser Particle Size Analyzer, which will show both the milled powder size distribution and also the surface area.

Having proved the capability of the test equipment, using tried and tested data, we can then accurately scale-up to a range of larger mills to suit the individual particle size and throughput requirements of our customers.

Please contact us to arrange a test date, we are sure you won't be disappointed



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