

## Specialist Milling

Custom Powders has acquired an excellent reputation in the area of specialist milling. Each year we process in this way a wide variety of products with varying characteristics. Examples are hard to mill materials with elastic characteristics, materials with a relatively low melting or softening point, aromatic, oily or fatty products, temperature sensitive, lightly flammable or explosion sensitive products.

By using special techniques these types of products can be milled efficiently without losing product quality or milling capacity. These kinds of processes are operated by skilled operators who have received specialist training. In principal these techniques are less suited for cheap products or for products that don't require specific requirements. As a company we do not process products that are completely incompatible with food and/or feed products or

products that are extremely explosion sensitive or might cause a threat to the health of our operators. We are not set up to process solvents.

With this method milling takes place in an environment with a low level of oxygen. The milling atmosphere is continuously checked and monitored for oxygen content.

Inerting a process is seen as being the easiest and safest protection against a dust explosion. By adding nitrogen to a process the oxygen level is reduced to a level that

makes an explosion impossible. Only so much nitrogen is used as necessary to achieve a high degree of safety with the lowest possible levels of nitrogen.

The mill normally selected for this process is an air classification mill because these are capable of milling very finely at high throughputs.



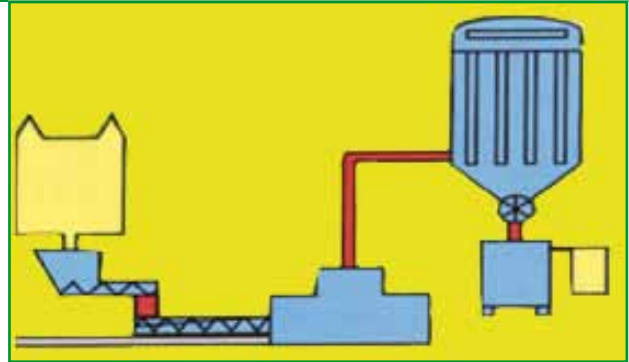
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### Cryogenic Milling

Cryogenic milling is a technique for milling difficult to mill products. The principal is liquid nitrogen is used to cool the material down to such a level that it becomes brittle and thus can be milled more efficiently. Cooling material down to levels below 0°C enables us to process sticky, soft or plastic products.

Liquid nitrogen into two insulated cryogenic screws in order to achieve a controlled cooling of the product. Ninety six hammers than mill the product down in a liquid nitrogen saturated environment. Classification of the particles is achieved by the use of internal classification or by sieving.

The advantages from this technique lie in the fact that it may increase the milling capacity, lesser milling loss, achieve better product quality and maintain product characteristics whilst processing in a safe manner.



The costs for such a milling procedure depend mainly on the throughput that can be achieved and on the quantity of liquid nitrogen that is required

We are looking forward to discuss with you the options and establishing the viability of this process for your products.

### Cool Milling

By using a specially designed mill in combination with large quantities of ambient air we succeed in creating cooled milling conditions that will support the more efficient milling of some products. If required extra cooling can be achieved by adding liquid or gaseous nitrogen. Hammer mills are used when the product needs to be milled to a reasonable larger size and air classification mills when finer particle size distributions are required.

The big advantage of this method lies in the fact that the cooling is achieved by the use of relatively cheap air and if necessary in combination with a certain dose of the more expensive

nitrogen. Not every product requires very cold temperatures and where possible this method can offer a cheaper alternative to cryogenic milling. This level of temperature prevents the evaporation of aromatic oils and can prevent the loss of product quality with temperature sensitive products.

