Chilling and freezing – gases keep food fresh for longer

Messer know-how and food? Of course, without gases some foodstuffs would be considerably less tasty. For example, in chip packets, nitrogen prevents sensitive flavors being degraded and fats becoming rancid as a result of atmospheric oxygen; gases are used to inert storage tanks, cool mixing machines, keep micro-organisms away and give meat its appetizing red appearance in packaging.

Coldness as part of the recipe

Those are just the obvious applications. It gets really interesting when you take a closer look at what the cooks in the food industry do – because gases and Messer know-how often perform their best work in the service of good taste quietly in the background.
Liquid nitrogen or carbon dioxide are ideal for effective cooling. Particularly with mixtures, it is often crucial to adhere precisely to certain temperature regimes in order, e.g. to ensure that dough mixtures or raw sausage meat do not get too warm and microbes do not have a chance to develop. Liquid nitrogen and carbon dioxide snow are practically part of the recipe. They allow the optimum target temperatures to be achieved quickly and accurately.

Cryogenic freezing – fast and effective

Rapid freezing is no longer just important for the production of frozen cakes. When fruit is frozen damage to its cell structure by sharp-edged ice crystals can only be avoided through very rapid cooling. No problem for the cryogenic gases and freezing applications offered by Messer under the brand name Cryogen®-Rapid. Thanks to their high freezing capacity, cryogenic gases cool much faster and more effective than all conventional methods. And the flexible, product-friendly Cryogen®-Rapid freezers do not even use up much space. For example, just a few square meters is all that is needed for the vertical freezer developed by Messer.

Coldness for hot ideas

Apropos freezing, this does not just mean preserving. Cryogenics can be used for many other things as well. One only has to think of fruit-flavored ice cream pellets, which are produced using a process developed by Messer where fruit-flavored ice cream mixtures are added drop by drop into liquid nitrogen. The process is so product-friendly that it can even be used to gently preserve bacterial cultures used in cheese production.

Fats are also much easier to dose if they can be processed into a fine powder. Here the compact VarioSol® process is used, whereby fats are atomized to very fine powders using liquid carbon dioxide while being cooled at the same time.

Keeping cool on the road

Meat, cheese, frozen pizza – an uninterrupted cold chain is needed to ensure that they reach the consumer at the required temperature. Here too the cryogenics specialist Messer provides greater reliability – for example, with the successful Siber System which uses dry ice for economical container cooling. This ensures that even if the doors are opened frequently, the refrigerated goods are brought back to their optimum temperature extremely quickly.

And at home?

Here you will find even more interesting Messer ideas. For example, on the breakfast table, in the shape of yogurt or cottage cheese, which are made creamy through gentle foaming with nitrogen. Or the sliced ham on your toast which was gently frozen with CO_2 snow prior to slicing. Bon appetit!

Cryogenic cooling and freezing installations like this Cryogen® Rapid spiral freezer are quick and take up very little space.

Cryogenic gases cool and freeze up to three times faster and are therefore more product-friendly than conventional refrigerating installations.

Cooling and freezing with nitrogen (N_2) and carbon dioxide (CO_2) ensure optimum product quality.

Application:	Know-how from Messer:	Advantages:
Cooling and freezing		
Freezing of food	Cryogen®-Rapid-Systems	The food products are frozen in a particularly product-friendly way; they do not dry out; low investment costs; flexible operation with little space required
Mixer cooling	Cooling during the mixing process with liquid nitrogen or liquid CO_2 (Variomix®); precisely metered spraying into the mixer	Agglomerations of the end product are significantly reduced; precise control of mixing temperatures through cryogenic metering
Cold grinding	Cooling with cryogenic gases in cold grinding	Reduced flavor loss and increased grinding performance; material sticking within the unit is avoided; prevention of dust explosions and fires through protective gas atmosphere
Freezing of starter cultures	Pelletizers (Cryogen®-Rapid Pelletizer, Cryopel®)	Production of free flowing and frozen starter cultures with high yield
Fine mincing	Cooling with cryogenic gases (Variokut®-process)	Improved protein degradation, controllable product quality
Transport cooling		
Containers	Cooling with dry ice or liquid carbon dioxide (Siber System)	Reliable adherence to temperature limits even over long periods; high cooling capacity; suitable for fresh and frozen goods; flexible logistics; bacteriostatic effect
Cooling with dry ice packs	Manufacture of packs with dry ice snow (Cryopack) for cooling	No losses; easy handling; allows excellent dosing; low investment

Reliable cold chain: container cooling with the Siber System ensures that the temperature limits are adhered to even over long periods.