

How to keep your samples cool during homogenization?

Many samples you want to keep them in cold or low temperature during processes to preserve the protein, drug or RNAs. Other than cryogenic grinding which the pestle is kept in liquid nitrogen in a bench top cooler, other bead beaters have different mechanism to keep the sample cool or attempt to do so. This short review will highlight how the samples are kept cold during homogenizations in bullet blender, precellys24 and fastprep24.

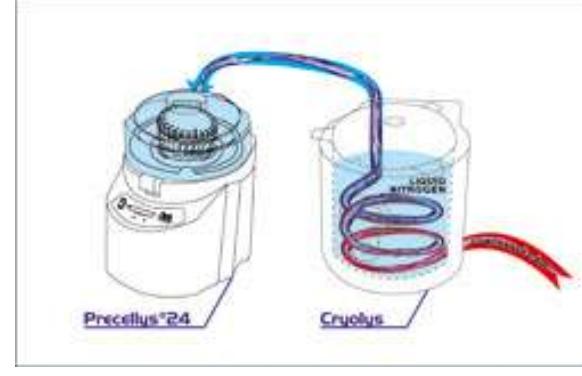
Next Advance Bullet Blenders: The homogenizer can be placed inside a small refrigerator or inside a cold room. Frozen samples need to be pre-thawed on wet ice for efficient homogenization.

<p>4°C Cooling</p>  <p>Air Cooling</p> 	<p>Next Advance Bullet Blenders:</p> <p>Bullet Blender homogenizers use fast strikes to achieve the fast sample homogenization. The temperature increase is much less than other continuously agitating mechanisms.</p> <p>-dry ice cold air bucket for the Gold model of bullet blender serves as a cold air source. Cold air is then pulled through the sample chamber which is heavily insulated from room temperature. The design is to keep the sample chamber at or around 4°C during homogenization.</p> <p>-air cool: a fan inside the homogenizer will pull the room temperature air or cold air in cold room through the sample chamber. This is a low cost way to effectively keep samples cool.</p> <p>Pro: simple design, low cost Con: no temperature monitoring</p>
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Available products: NA-01, NA-01R, NA-01SR,
NA-02AU <http://www.wisbiomed.com>

Precellys 24 cooling system Cryolys:

Precellys 24 makes 3D continuous motion to homogenize samples in the screw capped tubes. Frozen sample from liquid nitrogen or freezer can go directly into the homogenization tubes. Most of the homogenization protocols are only less than 30 seconds. The cooling unit Cryolys is connected to the sample chamber with a metal high pressure resistant tubing. Temperature monitor is usually placed on the Precellys 24 lid to monitor the temperature changes inside the sample chamber.

	<p>A separate cooling unit called Cryolys with either liquid nitrogen or dry ice to chill down the air in the circulation tube around -50C. A pump will drive the cold air fast from the cold coil to the sample chamber of Precellys24. A temperature monitor is normally placed on the lid of the Precellys to monitor the sample chamber temperature, -10C to 10C for example. The air flow rate is adjustable to keep the sample chamber at the intended temperature.</p>
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Pro: efficient cooling, sample chamber temperature is monitored real time

Con: need air source and a separate cooling unit

Available products: BC-PC24, BC-PCDU, BC-CRLS, BC-MINI

FastPrep24 cooling:

	<p>CoolPrep Adapter is a cryogenic adapter 2ml tubes. Based on passive temperature control technology, the CoolPrep™ adapter ensures an efficient cooling of the samples as dry-ice, placed into the moving tray is in direct contact with the sample tubes. Due to a high heat transfer capacity and FastPrep® precise settings of lysis parameters, the samples can be repeatably homogenized in their unthawed state.</p>
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Pro: The advantage is it uses wet ice which is available in most labs. No need to have dry ice or liquid nitrogen or air pump or house air to push air through the sample chamber.

Con: when wet ice melt in the bucket, liquid may splash and leaks from the assembly. Tube labels may come off or wash off during homogenization for they will be immersed in the melt ice water. When dry ice is used, venting of the gas and dry ice directly rub tubes may cause defacing of tube labels.

No product information available

Cryogenic Cooler: sample and homogenization tools are on liquid nitrogen mattress in a contained box. This is a convenient tool to process samples require extreme low temperature.

	<p>The CryoCooler is a valuable tool that helps to preserve the integrity of frozen vials of cultured cells and tissue specimens during routine handling. The CryoCooler well contains a pillow that adsorbs liquid nitrogen. Once charged, the pillow slowly releases liquid nitrogen vapor which can keep samples well at temperatures below -130°C for up to five hours. The CryoCooler is very useful for preparing stored tissue for RNA isolation or for the sorting of frozen vials.</p>
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Pro: simple design, convenient to use

Con: low through put

Product: OP-CG01, OP-CGS, OP-CL10

Visit <http://www.wisbiomed.com> for more information about the available products. Product not available through WISBIOMED can be viewed at manufacturer website.